

New baseline projections... China & the WTO... Exchange rates & the cotton sector... Farm household savings... Manure nutrient management

USDA Longrun Projections to 2011: Global Developments Play Key Role

In USDA's new longrun, 10-year baseline projections, a recovery in global economic growth following the slowdown of 2001-02 leads to stronger U.S. exports, gains in agricultural commodity prices, and rising farm incomes over the next decade. Slow U.S. and global economic growth in 2001-02 and a strong U.S. dollar provide a weak setting in the near term for the agricultural sector. In the longer run, projected improvement in world economic growth, particularly in developing countries, provides a foundation for gains in global trade and in U.S. agricultural exports.

WTO Accession Will Increase China's Agricultural Imports

China's accession to the WTO and further integration into the world economy is expected to lead to a wealthier and more stable international food system. Under terms of accession, China's agricultural trade regime will be more open and responsive to international markets. WTO accession is the latest initiative in a process of liberalization in China's economy that will also benefit U.S. agricultural exports. A modest increase in China's imports of important bulk commodities in the next few years should result from the new trade regime under the WTO, but most benefits to U.S. farmers will occur several years down the road. Accession must be viewed in the context of China's broader economic development and its transition from a planned to a market economy.

Calculating Damages in WTO Trade Disputes

Since its inception in 1995, the World Trade Organization (WTO) dispute settlement system has received over 200 notifications of trade disputes. While most disputes have been settled, in only three cases has the Dispute Settlement Board (DSB) had to approve damage awards. The system is designed to encourage the parties to settle disputes bilaterally. And although no explicit methodology is men-



tioned in the WTO agreements for calculating damages, these three cases suggest the DSB has adopted an approach that measures damages simply and transparently and in a way that minimizes incentives for WTO member countries to violate their agreements.

Imports & Lackluster Demand Pressure Catfish Prices

In the last 2 years, catfish imports have increased dramatically, in contrast to the 1990s when U.S. catfish production was a domestically focused industry. This rise in imports, combined with relatively flat per capita seafood consumption and increased inventories of catfish products, has put downward pressure on domestic catfish prices. Nevertheless, producers whose feeds are primarily grain-based should be able to take advantage of expected relatively low grain prices.

U.S. Cotton & the Appreciation of the Dollar

The dollar's strength has undoubtedly exacerbated the difficulties facing the U.S. textile industry during the recent slowdown in U.S. and world economic growth. It has also been a factor in lowering cot-

ton prices. Unlike textiles, cotton production in the U.S. accounts for about the same proportion of world production as in 1995 and slightly more than in 1990, and its share of world trade has surged. However, the dollar-denominated world price of cotton has fallen by an inflation-adjusted 56 percent between marketing year 1990 and February 2002.

Farm Families' Savings: Findings from the ARMS Survey

Savings play a direct role in helping to maintain farm households' standard of living from year to year as well as complementing other risk management strategies. If farmers save during "good times" and draw on the reserves, there might be less perceived need for large government outlays for disaster assistance and other unearned compensation to decrease income variability. Using data from the Agricultural Resources Management Study (ARMS) survey, USDA's Economic Research Service examined the influence of several factors on the types and level of farm household saving. These factors include size and type of farm, receipt of government payments, purchase of insurance, and major source of income (farm vs. off-farm).

Proposed Requirements for Manure Nutrient Management: Potential Sector Impacts

When manure from animal feeding operations (AFOs) exceeds land application needs for crop production, the runoff can enter waterways and impair water quality. The U.S. Environmental Protection Agency has proposed bringing additional AFOs under regulation and requiring implementation of nutrient management plans (NMPs) by all regulated AFOs, with a decision expected by December 2002. USDA's Economic Research Service estimated the potential national/regional impacts of the proposed NMPs on all regulated AFOs. In general, the results suggest that the proposed NMPs will not be highly disruptive to livestock and poultry production and may even increase returns to the overall industry.

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U.S. agricultural export value and market cash receipts to U.S. farmers have improved since the late 1990s, when large global production and weak global demand exerted downward pressure on prices and trade. Government payments to the sector, through marketing loan benefits and emergency and disaster assistance legislation, added to farm income during this period.

However, slow U.S. and global economic growth in 2001-02 and a strong U.S. dollar provide a weak near-term setting for the agricultural sector. In addition, for some agricultural commodities, such as soybeans and cotton, large world production and increasing global stocks have pressured prices. For wheat and coarse grains, in contrast, reduction in global stocks since the late 1990s has strengthened prices.

Longer run developments in the agricultural sector reflect strengthening domestic and international macroeconomic growth. Despite continuing strength in the U.S. dollar (a constraint on export growth) and growing trade competition, the projected improvement in world economic growth provides a foundation for gains in global trade and U.S. agricultural exports.

Strengthening economic growth in developing countries is particularly important for global agricultural demand and trade. Incomes in many developing countries are at levels where consumers tend to diversify their diets to include more meat and other higher valued food products. In these countries, the level of food consumption and imports of food and feed are particularly responsive to income changes.

Over the 10-year projection period, U.S. export gains, combined with steady increases in domestic agricultural demand, result in rising market prices, increases in farm income, and improvement in the financial condition of the U.S. agricultural sector. Consumer food prices are projected to continue a long-term trend of rising less than the general infla-

tion rate. The trend in consumer food expenditures towards a larger share for meals eaten away from home is expected to continue.

Projection Highlights For Field Crops

Baseline projections assume continuation of 1996 Farm Act provisions. Under extension of the current law, several major U.S. field crops would continue to receive marketing loan benefits during the projection period because their prices are low. Soybeans receive these benefits in the early years of the baseline, and rice and cotton receive benefits for the entire period.

For most major field crops, the domestic market is the main component of demand, although the export market is projected to increase in importance for several commodities. After an initial decline, U.S. wheat exports grow throughout the projection period as global consumption and trade rise. However, continued competition, particularly from the European Union, holds the U.S. trade share below levels of the late 1990s. Corn exports also grow in response to strengthening trade. The corn sector faces strong competition from Argentina, to some extent muting U.S. corn export gains.

U.S. exports of soybeans and products see greater gains in the initial years of the baseline as low market prices slow foreign production somewhat and encourage domestic crushing. As prices strengthen, however, foreign production rises further, particularly in South America, and increased competition leads to smaller gains in U.S. soybean exports. Although benefiting from payments under the cotton user marketing certificate program (Step 2), cotton exports decline through most of the projection period in the face of strong foreign competition.

Domestic demand for many crops is projected to grow faster than population. Strong projected gains in domestic use of corn for ethanol reflect bans on MTBE in many states. Increases in domestic soybean crushing reflect growth in poultry production and demand for soybean meal. Growth in domestic use of rice reflects a greater emphasis on dietary concerns and an increasing share of the U.S. population

of Asian and Latin American descent. In contrast, only moderate gains are projected for domestic food use of wheat, generally consistent with population growth. Domestic mill use of cotton falls, due in part to full phaseout in 2005 of textile and apparel import restrictions under the Multifibre Arrangement.

With demand strengthening, planted acreage for the eight major U.S. field crops (corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans) rises to about 257 million acres by 2011, somewhat less than the high of 260.5 million acres attained in 1996. Planting flexibility in farm programs facilitates acreage movements among crops by allowing producers to respond to market returns, with marketing loan benefits also important in low price years. Marketing loan benefits influence the aggregate level of plantings as well as the cropping mix in the early years of the baseline when prices for some crops are relatively low. Projected acreage gains in the longer term reflect land drawn into production based on strengthening market incentives as world demand grows.

A tightening balance between supply and demand results in declining stocks-to-use ratios for most field crops, with nominal prices rising.

Livestock Highlights

Trends toward larger and more commercialized livestock and dairy systems continue throughout the baseline. Decreases in real prices of meats combined with increases in real disposable income allow U.S. consumers to purchase more total meat with a smaller proportion of disposable income. Relatively lower priced poultry gains a larger proportion of both total meat consumption and total meat expenditures. Per capita consumption of eggs rises moderately as processed egg products become an increasing part of the egg market. Global meat trade and U.S. meat exports are projected to grow only moderately in the near term, partly a result of the recent slowdown in world economic growth. Exports for all meats benefit from a strengthening of global economic growth after 2002.

What Is the Baseline?

The USDA baseline provides longrun projections for the agricultural sector through 2011. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the agricultural sector, such as farm income and food prices. The projections are based on specific assumptions regarding macroeconomic conditions, policy, weather, and international developments. The baseline assumes that there are no shocks due to abnormal weather or other factors affecting global supply and demand, and that provisions of the 1996 Farm Act continue throughout the projection period.

The projections presented are one representative scenario for the agricultural sector for the next decade. As such, the baseline provides a point of departure for discussion of alternative farm-sector outcomes that could result under different assumptions. The projections in the USDA baseline report were prepared during September through November 2001, and reflect a composite of model results and judgment-based analysis.

USDA's complete 2002 baseline projections are available at:
<http://www.ers.usda.gov/briefing/baseline/>

Drought and poor forage conditions over the past several years have extended the liquidation phase of the current cattle cycle and, along with the length of biological lags, prevent beef-cow herd expansion before 2004-05. Beef production continues to shift toward a larger proportion of higher quality fed beef, with almost all steers and heifers being fed in feedlots. U.S. beef production also continues to move toward a higher graded product directed toward the export and domestic hotel-restaurant markets. The U.S. remains the primary source of high-quality, fed beef for export, largely to Pacific Rim nations.

Pork production expands moderately through the baseline. The pork sector continues to evolve into a more vertically coordinated industry, with larger, more efficient producers marketing a greater percentage of the hogs. These structural changes lower production costs, improve pork quality and product consistency, and facilitate timely production of pork products with characteristics desired by domestic and foreign consumers. The Canadian and U.S. pork sectors will become more integrated into a combined North American hog industry. The U.S. is an important net pork exporter, with long-term growth markets for U.S. pork exports focused on Pacific Rim nations and Mexico. Canada will increasingly compete for trade in these markets.

Broiler production grows steadily throughout the baseline, but gains slowly to only slightly more than population increases by the end of the projection period due to maturity of the sector. Continued technological improvements are expected to occur in the broiler and turkey industries, although efficiency gains are likely to be smaller than the rapid advances of the past 25 years. Processed products and fast-food markets are key sources of domestic growth for the poultry sector. The focus in global poultry markets is on low-value products, with the strongest import demand growth expected in Asia, Mexico, and Russia. Growing competition, notably from Brazil, holds U.S. poultry exports to moderate gains.

Milk production grows despite slowly declining cow numbers, as strengthening milk-feed price ratios, improved management, and dairy productivity gains push milk output per cow higher.

Ag Sector Relies Increasingly On Market Earnings

Over the last several years, net farm income has remained near the average of the 1990s mostly because of large marketing loan benefits and additional funds provided by emergency and disaster assistance legislation. With the baseline assuming no further ad hoc government assistance and with production flexibility contract payments scheduled to decline,

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farm income is initially lower as gains in commodity prices and cash receipts do not match the assumed reduction in government payments or offset the projected increases in production expenses.

The longer run outlook for the sector improves as domestic agricultural demand and exports strengthen and prices rise, leading to gains in farm income and greater stability in aggregate financial conditions. After holding relatively flat in 2002 through 2005, net farm income gradually moves upward for the rest of the baseline. The agriculture sector relies

increasingly on the marketplace for income rather than on government payments.

Debt management will be crucial to the financial condition of the agricultural sector over the next several years. Longer run increases in farm incomes and relatively low interest rates support asset accumulation and debt management, leading to improvement in the financial condition of the farm sector.

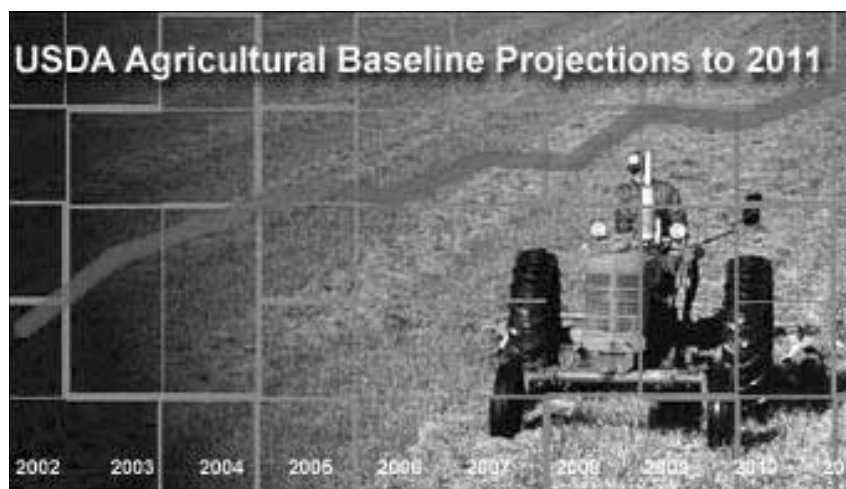
Ag Trade Surplus Grows

The value of U.S. agricultural exports rises to \$77 billion by fiscal year 2011, up from about \$53 billion in 2001. Both bulk and high-value product exports are expected to show strong growth, with high-value products accounting for about two-thirds of the total. The agricultural sector continues to have a trade surplus, which rises through the projections, but still remains below the record surplus of 1996. **AO**

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On the ERS web site

USDA's Projections for 2002-11



USDA Agricultural Baseline Projections to 2011

Baseline highlights

<http://www.ers.usda.gov/Briefing/baseline/summary.htm>

Complete Baseline report

<http://www.ers.usda.gov/publications/waob021/waob20021.pdf>

Data tables

<http://www.ers.usda.gov/db/baseline/>

Briefs

Agricultural Trade**Imports Increase as Share of U.S. Food Consumption**

In the second half of the 1990s, Americans increased the proportion of imported foods they consumed. Imports as a share of food consumption climbed to an average 9 percent annually in 1996-2000, up from 7.6 percent in the two decades before 1996. The rise is attributed partly to greater demand for high-value agricultural products that other countries offer, and partly to the higher exchange rate of the U.S. dollar, which increases the purchasing power of the dollar. By 2000, the inflation-adjusted value of the dollar, compared with the currencies of countries who import U.S. foods, was 21 percent higher than in 1995.

The import share of food consumption—the ratio of imported quantity to the total quantity of food consumed—is influenced by long- and short-term factors affecting the supply of, and demand for, imported food relative to domestic food. Likewise, supply and demand conditions in the domestic food market have a bearing on import share. If food import quantities were unchanged, import share rises if consumption of domestic food declines. If domestic food supply drops relative to foreign supply, import share would be expected to rise, assuming total demand was unchanged. U.S. demand for imported food is influenced by relative prices of

imported versus domestic food, taste preferences, and domestic income growth. As demand changes, supply will shift accordingly. Thus, feedback effects from demand to supply and from supply to demand affect the longrun pattern of U.S. food import share.

Several factors have caused the import share of certain foods consumed in the U.S. to rise over the past 25 years. The continuous rise in import shares of fruits and vegetables is related to improved transport and storage technology, as well as consumers' desires to raise the nutrient content of their diets. Also, for certain commodities such as fish and shellfish, domestic production may be unable to keep up with consumer demand. In addition, the seasonal production of perishable domestic fruits and vegetables invites more imports during the off-season.

Changes in demographics, economic well-being, and liberalization of international trade policy are also reflected in the marketplace. The increasing ethnic diversity of the U.S. population correspondingly demands a greater variety of foods and food sources. Rising consumer income fuels the importation of high-value products, including fresh, exotic, and specialty foods and certain processed foods. And

more open trade agreements induce lower cost foreign producers to supply the large U.S. market.

Regional trade agreements can complicate accounting for trade shares. For example, products are exported from the U.S., processed into higher valued products, and may be imported back into the U.S. In the absence of trade restrictions or tariffs, the relative prices of products determines the trade flows.

Short-term changes in import share generally result from temporary developments such as exchange-rate movements, food safety concerns, and weather conditions. At times, U.S. farmers find it more profitable to produce for export markets, which reduces supply to the domestic market. A higher dollar exchange rate encourages import demand as U.S. purchasing power increases. If consumer income rises at the same time, the impact on import share is magnified. While exchange rates do not permanently affect import share, changes in per capita income growth do—and markedly affect the import share of higher value food items such as sturgeon caviar that are not available from domestic sources.

A Recent Rise in Aggregate Import Shares

USDA's Economic Research Service calculated the import shares of major food groups for 1976 to 2000. Per capita U.S. consumption shares of each food group

Import Shares of U.S. Food Consumption

Food groups	Average				1996	1997	1998	1999	2000p	Average 1996-2000
	1976-80	1981-85	1986-90	1991-95						
	Percent									
Total food consumption	7.4	7.2	7.7	7.7	8.6	9.0	9.0	9.3	9.2	9.0
Animal products	3.3	3.4	3.7	3.5	3.4	3.5	4.0	4.5	4.6	4.0
Red meat	6.6	6.7	8.1	7.3	6.4	7.1	7.7	8.2	8.9	7.7
Dairy products	1.8	1.9	1.8	1.9	1.9	1.9	2.4	2.9	2.9	2.4
Fish and shellfish	48.4	50.9	56.0	56.0	58.5	62.1	64.7	68.1	69.0	64.5
Crops and products	10.6	10.2	10.7	10.6	12.1	12.7	12.5	12.5	12.3	12.4
Fruits, juices, and nuts	8.7	12.4	16.6	15.5	16.4	16.6	17.3	19.2	19.1	17.7
Vegetables	4.0	4.8	6.0	6.0	7.9	8.1	9.1	9.1	9.0	8.6
Vegetable oils	19.7	15.7	19.7	19.3	19.2	20.9	21.0	17.9	20.2	19.8
Grain cereals	0.6	1.0	2.5	5.8	5.0	6.7	5.9	6.0	5.3	5.8
Sweeteners and candy	31.8	21.2	10.4	9.8	15.8	15.7	11.1	9.0	8.3	12.0

p = preliminary or projected.

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were used as weights in estimating the weighted average of import shares for crops, animal products, and total food consumption.

A number of adjustments were made to more closely estimate U.S. food consumption. With respect to grains, the amount used for feed, seed, alcohol, fuel, and industrial production was excluded. Correction for waste and spoilage was likewise made. Still, because of waste and spoilage in the food marketing system and in the home, food consumption estimates tend to overstate actual consumption. In addition, when a portion of imported commodities is exported, the amount of imports can exceed actual domestic consumption, which can raise the import share above 100 percent. This was the case for olive oil in 1995 and canola oil in 1980.

Following a relatively flat range of 7.5-7.7 percent from 1976 to 1995, the aggregate import share of U.S. food consumption jumped to 8.6 percent in 1996, then to 9.3 percent in 1999. Although individual food groups exhibit varying long-term import share patterns, the respective average shares for animal products and crops follow generally flat trends before a sharp incline—in 1996 for crops and in 1998 for animal products. By 2000, the aggregate import share of animal products was 4.6 percent, up from 3.3 percent in 1995. For crops, the import share climbed to 12.3 percent in 2000 from 10.5 percent in 1995.

These jumps in import share coincided with both the continued appreciation of the U.S. dollar and strong U.S. economic growth. Separating the relative effects of these two macroeconomic events is outside the scope of this analysis, although the price effect of the exchange rate by food group can be measured.

The purchasing power of the dollar grew 21 percent from 1995 to 2000 with respect to all countries supplying U.S. food imports. With respect to red meats, the dollar rose 22 percent against source countries' currencies. This explains part of the rise in import share of red meats to 8.9 percent in 2000 from 6.4 percent in 1996.

In contrast, the dollar appreciated by only 3 percent against the currencies of U.S. sources of vegetables between 1995 and 2000, due largely to the appreciation of the Mexican peso against the dollar in price-adjusted terms. That the import share of U.S. vegetable consumption rose to 9 percent in 2000 from 7 percent in 1995 is thus largely due to U.S. income and such long-term effects as improved transport and storage technology, and consumers' desire to raise nutrient content in their diets. The 33-percent boost in import share of fruits and nuts on the other hand—from 14.2 percent in 1995 to 19 percent in 2000—is partly the result of the dollar's 18-percent gain with respect to the currencies of fruit and nut source countries. The U.S. income growth of 22

percent also helped boost fruit and nut imports.

The average import share of crops in 1997 and 1998 was more than 3 times that of animal products—12.6 percent compared with 3.5 and 4 percent. Crop share in these years was also higher than its 10.6-percent average in the previous decade. Similarly, the share of crops in U.S. per capita food consumption has grown steadily to 56 percent in the late 1990s from 53 percent in 1976-85, while the share of animal products slipped to 44 percent in 1997-2000 from 47 percent in 1976-85.

These long-term trends indicate the increased importance of crop foods in American diets, and reflect the decline in per capita consumption of red meat and dairy products. Nevertheless, due largely to the strong dollar, import shares of both crops and animal products have increased in the late 1990s.

If trends in the past few years continue—that is, if more red meat, fish and shellfish, fruits, nuts, and vegetable oils are imported—the future import share of U.S. food consumption will rise. Driving these trends are increased preference for high-value imports, the strength of the dollar, and renewed growth of U.S. per capita income. **AO**

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For more information on global food trade issues:

Food Review: Global Food Trade, December 2001

[www.ers.usda.gov/publications/
FoodReview/septdec01/FRv24i3c.pdf](http://www.ers.usda.gov/publications/FoodReview/septdec01/FRv24i3c.pdf)

Commodity Spotlight



USDA photo: David Nance

U.S. Cotton & the Appreciation Of the Dollar

Exchange rates can have an enormous impact on a country's economy, as the Asian financial crisis and recent events in Argentina have demonstrated. The dollar's strength has undoubtedly exacerbated the difficulties facing the U.S. textile industry during the recent slowdown in U.S. and world economic growth, and has been a factor in lowering cotton prices. Exchange rates are difficult to forecast, but understanding the changes to date might provide some guidelines for future expectations.

Since it began adjusting freely in 1971, the U.S. dollar has strengthened more with respect to the currencies of developing countries than developed countries, although this long-run pattern reversed in the late 1990s. Since the 1980s, a large number of developing countries reoriented their economies to encourage exports and foreign investment. Previously, overvalued exchange rates had helped many countries indirectly subsidize selected industries, through government rationing of undervalued foreign exchange. As it became apparent that exposure to foreign capital and competition led to higher sustained rates of economic growth, many countries terminated these "import-substitution" policies and dropped their overreaching currency pegs. In 1997, the Asian finan-

cial crisis forced still more countries to abandon fixed exchange rates with respect to the dollar, and to devalue. In contrast, for developed countries like Germany and Japan, convergence with U.S. technical prowess and productivity led to apprecia-

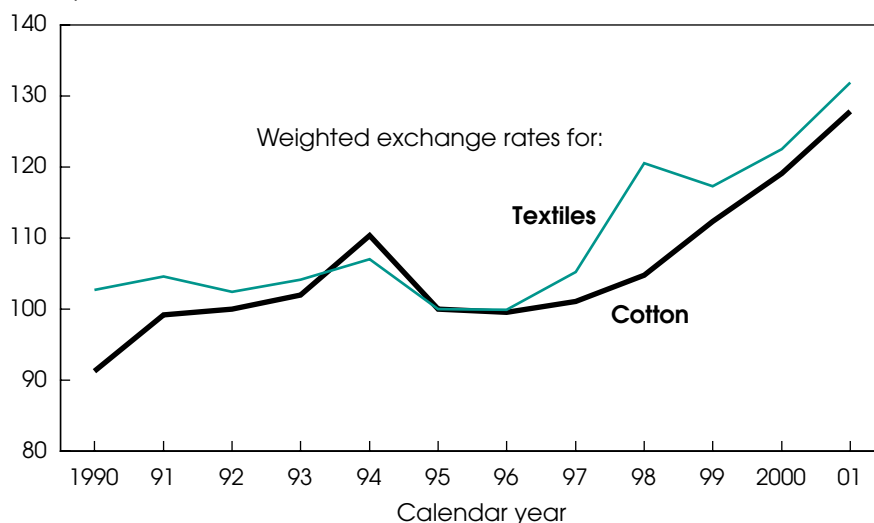
tion of their currencies with respect to the dollar from 1971 to 1995.

During the 1990s, the U.S. economy demonstrated renewed productivity growth. At the same time, the aftermath of Japan's 1980s "Bubble Economy," and uncertainty regarding the European Union's structural rigidities and evolving monetary union, took some of the luster out of the outlook for these economies. Since 1990, the inflation-adjusted U.S. dollar has appreciated 42 percent against the currencies of its textile trading partners in developed countries. In contrast, the U.S. dollar appreciated only 16 percent against the currencies of developing countries. This is the reverse of the pattern observed over the longer period of the 1960s through 1995.

The dollar has appreciated 13 percent since 1990 with respect to all textile trading partners combined. If Mexico is excluded—in acknowledgement of the integration of the U.S. and Mexican textile industries driven by the North American Free Trade Agreement (NAFTA)—the dollar's appreciation has been greater, 18 percent.

U.S. Dollar Steadily Strengthens

Index, 1995=100



U.S. real, weighted exchange rates. For textiles, weighted by trade (excluding Mexico); for cotton, weighted by foreign cotton production.

Economic Research Service, USDA

Commodity Spotlight

U.S. Cotton & Textiles/Apparel Respond Differently

For U.S. cotton, exchange rates have shifted even more unfavorably than they have for textiles, but U.S. cotton output has been relatively unchanged while U.S. textile output has fallen. Weighted by foreign cotton production, the dollar has appreciated 40 percent since 1990, even though China, the largest foreign cotton producer, pegs its currency to the dollar. China is one of a handful of large economies that maintain a de facto fixed exchange rate against the dollar, and the dollar has only appreciated 16 percent against the yuan since 1990. The average depreciation for other cotton producers was 53 percent. Uzbekistan—the largest foreign exporter—also manages its currency, but data from Uzbekistan and other Central Asian exporters are poor, and these countries were excluded from the calculation of the production-weighted index (altogether, 10 percent of world production was excluded). Also, Uzbekistan did not have its own currency before 1994, making longrun comparisons difficult. Uzbekistan's exchange rate has been perceived to be overvalued since 1996, and the government has recently been devaluing.

According to numerous economic studies, changes in the dollar's exchange rate and changes in dollar-denominated commodity prices largely parallel each other. Generally speaking, when a country's currency appreciates, then either its share of world trade and production will decline or its prices must drop in terms of its own currency. Unlike textiles, cotton production in the U.S. accounts for about the same proportion of world production as it did in 1995, and slightly more than in 1990, and its share of world trade has surged. However, the dollar-denominated world price of cotton fell an inflation-adjusted 56 percent between marketing year 1990 and February 2002.

The U.S. textile industry's cotton use in 2001/02 is forecast 35 percent lower than in 1994/95. Some U.S. spinning mills are running at below-average capacity, but many others have been shut down, dismantled, and exported to Asian textile producers. U.S. spinning mills have been indirectly affected by foreign competition

What Is a Weighted Exchange Rate?

An exchange rate is the price of one currency in terms of another and, since the collapse of the Bretton Woods system in 1971, the price of the U.S. dollar has floated freely. There are as many U.S. dollar exchange rates as there are other currencies; and even countries fixing the nominal price of their currencies in U.S. dollars will nonetheless probably have fluctuating inflation-adjusted exchange rates. A currency is a financial asset, and prices of financial assets are more volatile than prices of goods. Thus, the costs and returns of exchange between two countries varies with the inflation-adjusted exchange rate between them. However, even countries that do not trade with one another or even compete in common markets can indirectly influence one another through trading partners.

A weighted average is one way to summarize the aggregate impact on one country of global foreign exchange markets and policies. Since the exchange rate is only directly relevant to transactions across international borders, economywide measures of aggregate exchange rates are typically weighted by the value of merchandise trade. The International Monetary Fund's (IMF) trade weights take into account third market competition and competition between domestic imports and home production. However, as the IMF points out, "no single available measure can claim...status [as a]...uniformly superior indicator of competitiveness." The IMF's inflation-adjusted U.S. exchange rate index appreciated 35 percent during 1995-2001.

Much simpler calculations were used to derive the weights used here. For the textile trade-weighted index, the inflation-adjusted U.S. exchange rate with each country was weighted by that country's share of total U.S. textile and apparel imports and exports during 1995-99. For the cotton index, weights equal each country's share of foreign cotton production during 1995-2000. Production was chosen rather than trade since much of the output of the largest foreign cotton producers is consumed domestically, and then exported as textile products. In the long run, since cotton is almost exclusively a cash crop and much of apparent domestic consumption is eventually exported, production seemed a more suitable weight.

Since 1995, the cotton production-weighted U.S. exchange rate has appreciated by 28 percent, while the trade-weighted rate appreciated 43 percent. Virtually the same pattern is observed in rice production- and trade-weighted indices. For wheat, the difference in appreciation is more pronounced: 22 percent with production weights versus 40 percent for trade weights. On the other hand, for beef, both production and trade weights lead to indices with about a 42-percent appreciation. Since a substantial portion of grain output in countries like China is never even traded on domestic markets—let alone international markets—for grain, a trade-weighted index is much more indicative of the impact of exchange rates on the U.S. than a production-based index.

as the apparel industries they supply in North America have reduced output or closed, in part due to the strength of the dollar. The U.S. trade deficit in cotton textiles and apparel has about doubled, increasing from one-third of U.S. consumer purchases in 1994/95 to more than 60 percent in 2001/02. During this time, apparel prices have been relatively unchanged, falling only 3-4 percent, in marked contrast to the cotton industry's falling prices and relatively steady production.

The different responses for textiles and cotton reflect several factors. Generally, prices are much more flexible for undifferentiated commodities like cotton and corn than for more differentiated products like clothing and cars. Another difference is reduced import protection for the U.S. textile industry. For decades U.S. producers have been protected from competition by import quotas under the Multifibre Arrangement (MFA). But since 1995, these quotas have been progressively relaxed in accordance with U.S. obliga-

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tions under the World Trade Organization. Estimates from the International Textile and Clothing Bureau (an intergovernmental organization of developing country textile exporters) indicate that the U.S. expanded its MFA quotas by more than 30 percent between 1995 and 2001. Also, NAFTA and the extension of similar privileges to Caribbean Basin textile exporters have effectively reduced U.S. import protection for textiles and apparel. Finally, U.S. cotton producers benefit from the marketing loan program, which helps producers maintain revenues while permitting large adjustments in market prices.

Exchange Rate Outlook Unclear

Exchange rates are difficult to predict. Economists have been hard-pressed to find any model that forecasts shortrun exchange rate movements any better than assuming no future change. In the long run, currencies adjust to equilibrate inflation-adjusted prices of tradable goods in the world's economies. However, the studies that demonstrate this adjustment have used data spanning decades, so it is far from clear which is closer to the equilibrium level: 2001's strong dollar or its lower point in 1995, before appreciation. Exchange rates are volatile, and the inflation-adjusted U.S. exchange rate has more than once changed by at least 40 percent in the space of a few years. On the other hand, it also can take several years for currencies to correct divergences from equilibrium, with half of the divergence typically persisting after 3-5 years.

Thus, even if the recent appreciation of the U.S. dollar is not a permanent phenomenon, there is no guarantee that depreciation can be expected in the immediate future. During the last half of the 1990s, the U.S. dollar appreciated versus other developed countries as equity and bond investment flowed into the U.S. With actual and prospective budget surpluses, U.S. fiscal policy during this period was quite different than during previous years. U.S. growth versus the rest of the world was the fastest since 1985, which not coincidentally was the previous period of dollar appreciation. Private forecasters like DRI-WEFA or Oxford Economics are not forecasting such relative U.S. economic strength over the next few years, although the recent poor economic news from Japan and resumed deterioration of the yen suggests the U.S. dollar will not quickly depreciate against Japanese yen.

The euro could appreciate as it completes its transition period, assuming the European Central Bank can establish its credentials. Alternatively, the large investments that occurred in the U.S. during the 1990s may have raised productivity. Faster productivity growth in the U.S. than the rest of the developed world would sustain the value of the dollar, just as relatively slower U.S. growth helped drive the dollar's depreciation during 1971-95.

Regarding developing countries, the danger remains that countries attempting to fix their exchange rates or continue import-substitution policies may eventually devalue their currencies. To varying

degrees, the largest foreign cotton producers—China, India, and Pakistan—attempt to control their exchange rates. India and Pakistan are likely to face significant fiscal deficits and devaluation in the future, although the lack of fixed exchange rate pegs argues for gradual changes. China's fixed peg carries both the prospect of stability for the foreseeable future and the potential for the compression of future changes into a shorter time frame.

Uzbekistan and the rest of Central Asia remain even less predictable, although for the foreseeable future their exchange rate policies will be less relevant to the world cotton industry than the rest of their economic policies. (At the end of January 2002, Uzbekistan announced a program monitored by the International Monetary Fund to significantly close the gap between its official and black market exchange rates and to increase the transmission of world prices to its cotton producers. See *ERS Cotton and Wool Outlook*, CWS-0202, March 2002 for details.)

For the rest of the developing world, it remains to be seen if countries can maintain flexible exchange rates as they make the long-term effort to establish credible monetary and fiscal policies, or whether the shift towards floating exchange rates and opening financial markets was a cyclical phase. Regardless, exchange rates will remain an important influence for the U.S. cotton and textile industries, as they are for all tradable goods and services.



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Commodity Spotlight



USDA photo: Peggy Greb

Imports & Lackluster Demand Pressure Catfish Prices

Throughout the 1990s, U.S. catfish production was a domestically focused industry, with only small amounts of imports and exports. In the last 2 years, however, catfish imports have increased dramatically. This, combined with relatively flat per capita seafood consumption and increased inventories of catfish products, has put downward pressure on domestic catfish prices.

Seafood Imports Up, Per Capita Consumption Flat

Imports play a major role in satisfying overall U.S. seafood demand. Imported seafood is made up of a wide variety of fish and shellfish products, many of which are farm-raised. Shrimp, Atlantic salmon, and tilapia are the three most valuable farm-raised imports. But catfish from Vietnam, crawfish and mollusks from China, and mussels from Canada and New Zealand are also among the farm-raised products imported.

Both domestic seafood producers and exporters to the U.S. market have faced relatively sluggish U.S. consumption over the past decade. Per capita seafood consumption varied little from 1990 to 2000, staying between 14.6 and 15.6 pounds

over the entire period (2000 is the last year for which data are available).

This virtual “no growth” situation came about in a decade when favorable income and food consumption patterns would suggest rising consumption. Increasing incomes tend to translate into greater consumption of seafood, and greater food consumption in the away-from-home market could be expected to boost seafood consumption. Despite strong increases in disposable income and continued growth in the percentage of meals eaten away from home during the decade, per capita seafood consumption remained virtually unchanged.

This lackluster picture of growth in per capita consumption does not mean that all was static in seafood consumption. In 1990, U.S. per capita seafood consumption was 15 pounds, with fresh and frozen products at 9.6 pounds, canned products at 5.1 pounds, and cured products at 0.3 pounds. By 2000, the pattern had shifted slightly, with fresh and frozen products totaling 10.5 pounds and canned products falling to 4.8 pounds. Shrimp consumption accounted for much of the growth in fresh and frozen products, and amounts to slightly over 20 percent of total seafood consumption. Catfish consumption in

2000—mostly fresh and frozen fillets—was about 1.1 pounds per capita, or 8 percent of the total.

Catfish Sales Up Slightly In 2002 Despite Low Prices

Catfish production is the dominant and most successful sector of the U.S. aquaculture industry, accounting for over 60 percent of U.S. aquaculture production. Production is concentrated in the Delta states of Mississippi, Alabama, Arkansas, and Louisiana, primarily because of warm climates, abundant water, ready access to feeds, and heavy clay soils for pond construction. In 2001, these four states accounted for 97 percent of total U.S. output, with Mississippi’s 60-percent share leading the way.

A catfish farm is similar to other livestock feeding operations. Fingerling catfish are placed in ponds, provided with special feeds, carefully monitored for any signs of disease, and provided with an optimum environment (proper water quality and oxygen levels) until they reach market size.

The greatest difference between catfish farming and hog or poultry operations is that the production area is outside, so catfish farmers are faced with problems unlike those of other livestock industries. While almost all hogs and chickens are raised inside specially constructed, climate-controlled buildings, open ponds leave catfish operations vulnerable to less-than-ideal growing conditions and to predators. Water temperatures can become above or below optimal, for example, causing catfish growth rates to decline. Adverse weather conditions can also interfere with feeding or harvesting. Predators, mostly birds, threaten catfish production, and growers are evaluating a number of nonlethal ways to keep birds away from the ponds.

Catfish sales by growers to processors are expected to increase in 2002 and reach between 603 million and 615 million pounds, up 1-3 percent from 2001. Sales in 2001 were mixed. Grower sales were higher than the previous year in April and May and again in December, but about even or lower than the previous year during the other months.

Commodity Spotlight

Catfish processor sales were also weak, finishing the year at 296 million pounds, down less than 1 percent from 2000. The slowdown in processor sales caused inventories to accumulate throughout the year, and processors' holdings of finished products at the end of January 2002 were 1.8 million pounds above the previous year.

Lack of growth in grower and processor sales has been overshadowed by the continuing decline in grower and processor prices. Farm prices fell almost continually during 2001. Prices started 2001 at 69 cents a pound and then moved downward, finishing at 55 cents a pound in December. Average processor prices followed roughly the same path, moving from \$2.32 a pound in January 2001 to \$2.09 a pound in December.

Based on grower inventories reported as of January 1, 2002, grower sales are expected to show modest increases during the first half of 2002 compared with the previous year. Boosted by relatively strong grower prices going into 2001, growers had increased capacities and stocks of fish for breeding. Entering 2002, growers still have relatively large holdings of small food-size fish, up 20 percent from the previous year. These fish will be sold during the first half of 2002, normally the period of highest demand due to greater fish consumption during the Lenten period. Most of the increase in the small food-size fish inventory was in the three largest catfish producing states (Mississippi, Alabama, and Arkansas).

The large inventory of small food-size fish held by growers is expected to prevent any significant upward movement in farm prices during the first half of 2002. Grower sales in the second half of 2002 will be affected not only by supplies but also by the performance of the general economy and red meat and poultry supplies. Higher poultry supplies are expected to have a slight downward effect on catfish sales. However, catfish sales are expected to gain some strength in the second half of 2002, helped by lower beef and pork supplies. Farm prices for catfish are expected to remain depressed during the first half of 2002, improving in the second half of the year, but still remaining

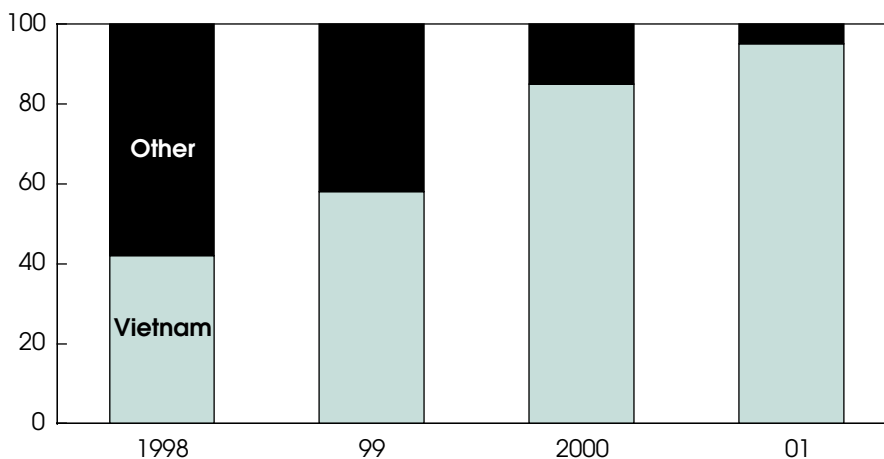
Labeling: When Is a Catfish Not a Catfish?

The appropriation bill for Agriculture, Rural Development, Food and Drug Administration, and Related Agencies, signed into law on November 28, 2001, contained a provision related to catfish imports. Section 747 states that "none of the funds appropriated or otherwise made available by this Act to the Food and Drug Administration shall be used to allow admission of fish or fish products labeled wholly or in part as 'catfish' unless the products are taxonomically from the family *Ictaluridae*." The food industry uses these types of definitions to identify specific products. For example, for an item to be labeled only "caviar," they must be sturgeon eggs. A similar product from salmon can be labeled "salmon caviar."

In 2001, the U.S. imported 17.1 million pounds of frozen catfish fillets from Vietnam, valued at \$21.5 million, accounting for 95 percent of all frozen catfish fillet imports on a quantity and value basis. The law is expected to strongly impact imports from Vietnam, as the catfish species farmed in that country is from the family *Pangasiidae*.

Vietnam Accounts for Increasing Share of U.S. Frozen Catfish Fillet Imports

Percent



Economic Research Service, USDA

lower than the average prices seen over the last 5 years.

Over the last several years, most catfish farmers have benefited from low feed prices, and prices for both corn and soybeans are expected to remain relatively low again in 2002. The combination of low feed costs and relatively low interest costs is expected to help catfish producers weather the prolonged period of low grower prices that has affected the industry since the last quarter of 2000. The latest forecasts indicate that corn prices are expected to be slightly higher than in 2001, but prices for soybean products are

expected to be lower than the previous year.

Catfish Production To Rise Slightly in 2002

At the start of 2002, catfish growers indicated that stocks of broodfish had declined, but that stocks of all classes of food-size fish were higher than the previous year. The catfish grower survey, which is conducted annually by USDA's National Agricultural Statistics Service in January, is the only one that includes data from states other than the four largest producing states (Mississippi, Alabama, Arkansas, and Louisiana). Inventory levels of food-size catfish have increased for

Commodity Spotlight

From Hatchery to Market: A Glossary of Catfish Terms

Fingerlings/fry: Fish weighing 0.06 pounds or less (measured as 60 pounds per 1,000 fish or less).

Small stockers: Fish weighing over 0.06 pounds and up to 0.18 pounds (measured as over 60 pounds and up to 180 pounds per 1,000 fish).

Large stockers: Fish weighing over 0.18 pounds and up to 0.75 pounds (measured as over 180 pounds and up to 750 pounds per 1,000 fish).

Small food-size fish: Fish weighing over 0.75 pounds and up to 1.5 pounds.

Medium food-size fish: Fish weighing over 1.5 pounds and up to 3 pounds.

Large food-size fish: Fish weighing over 3 pounds.

Broodfish: Fish kept for egg production, including males. Broodfish produce the fertilized eggs which go to hatcheries. The most desirable individual size is 3-10 pounds or 4-6 years of age.

the fourth year in a row, with the level of grower-held inventories in 2002 up considerably from 2001.

At the beginning of 2002, the total number of food-size catfish held by growers was estimated at 404 million, up 21 percent from the previous year. There were large inventory increases in each of the three food-size fish categories. The inventory of large food-size fish was 56 percent above the beginning of 2001. Strong increases in inventory numbers for this size class came in Alabama, Arkansas, and Mississippi. The number of medium food-size fish held by growers totaled almost 106 million, up 20 percent from the previous year. In this size class, large increases in holdings by growers in Alabama, Arkansas, and Louisiana more than offset a small decline in Mississippi's holdings.

Small food-size fish normally account for the bulk of growers' food-size inventories, in terms of numbers. These fish average around 1 pound and will make up the core of fish processed during the first half of 2002. At the beginning of 2002, growers estimated there were 287 million small food-size fish on their farms. This is up by about 47 million, or 20 percent more small food-size fish than had been in inventory at the beginning of 2001. Over the last 2 years, inventory holdings of small food-size fish have risen by about 87 million. This increase in stocks, plus a number of other factors, has placed downward pressure on grower prices.

The number of market-size catfish in ponds at the beginning of the year represents the supplies available to processors. With a strong increase in the inventory of food-size fish, a slower economy than the previous year, and increased competition from imports, catfish prices are expected to remain depressed. Prices are not expected to move upward even though the first half of the year is normally the strongest demand period.

The numbers of stockers and fingerlings in inventory at the start of the year will become the majority of fish available to processors in the second half of the year. The January 1, 2002 inventory report indicated a 20-percent decrease in the number of stockers held by growers. There were 1.066 billion fingerlings in inventory at the start of 2002, 4 percent higher than the previous year. With a lower inventory of stockers and small growth in fingerling holdings, the total available supply of catfish for processing is expected to decline in the second and third quarters.

With current prices so low, many growers are likely to lower stocking rates through the middle of 2002. While a smaller supply of catfish would normally be forecast to put some upward pressure on prices, the strength of the economy, supplies of competing meat and poultry products, and imports will also have a strong influence.

Farm Prices Lower Over First Half 2002

In 2000, the farm price for catfish averaged 75.1 cents a pound. Prices were 76 cents a pound in July 2000, then declined in the second half of 2000, ending at 68 cents a pound in December. Large holdings by growers, high stocks of processed catfish, and an influx of imported catfish all combined to keep downward pressure on prices at the beginning of 2001. Over the first half of 2001, farm prices averaged 69 cents a pound, down 12 percent from the previous year. As the economy declined in the second half of 2001, farm prices fell even lower, ending the year at only 55 cents a pound. This was the lowest price for catfish since January 1992.

The expected scenario for 2002 is for continued low prices during the first half of 2002, as the large supplies of food-size fish are utilized. Prices after this period are expected to show some upward movement as the much-lower supplies in the stocker class become the major source of supply for processors.

During 2001, farm sales to processors totaled 597 million pounds, with an average price of 64.7 cents per pound. This implies gross sales of \$385 million for catfish growers, down more than 13 percent from a year earlier. Including sales of broodfish, stockers, and fingerlings to other producers and outlets, catfish growers reported total sales of \$443.4 million in 2001, 12 percent lower than in 2000. For 2002, with an expected small increase in sales and relatively flat farm prices, grower sales of catfish to processing plants are expected to generate between \$390 million and \$405 million.

Processor Revenues Down 6 Percent

During 2001, catfish processors sold 296.4 million pounds of product, down less than 1 percent from a year earlier. The average price for all processed catfish products in 2001 was \$2.26 per pound, down 4 percent from 2000. Much of this decrease was due to weak sales in the frozen market, where the average price fell by 16 cents a pound. The average price for fresh catfish products also declined, but by only 8 cents a pound.

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With a decrease in sales volume and a lower average price, gross processor revenues from catfish sales declined by \$66 million in 2001, 6 percent lower than in 2000. With expectation of slightly higher sales levels and relatively stable prices, processor revenues are forecast to reach between \$675 million and \$690 million in 2002.

Overall sales of processed catfish fell slightly in 2001, but sales of fresh products rose by 3.5 percent. Most of the increase in fresh product sales was due to a 9.6-percent increase in fresh fillet sales. Sales of fresh whole fish declined 4.2 percent, and sales of fresh other products (nuggets, strips, etc.) were about even with the previous year. While volume rose, the average price for fresh catfish products fell 3.5 percent. The average prices of whole, fillet, and other products all were between 4.6 and 5.7 percent lower than the previous year. The average price for fresh products decreased less, because the increase in sales of fillet products pushed the average price higher.

Frozen catfish products averaged \$2.30 per pound in 2001, down 6.5 percent from the previous year and the lowest since 1993. The largest price decline was for frozen fillets—the category most affected by the increase in catfish imports, which were primarily frozen fillets from Vietnam. Frozen catfish fillet imports in 2001, 95 percent of which were from Vietnam, totaled 18.1 million pounds, up 120 per-

cent from 2000 and 424 percent higher than in 1999. Imported catfish accounted for 6 percent of U.S. catfish supply.

The average price for frozen fillets was down 7.8 percent compared with 2000, and sales volume fell by 3.8 percent. Sales of frozen fillets are the largest segment of catfish sales, accounting for 39 percent of total sales in 2001. Sales of frozen other products in 2001 actually rose to a record 48 million pounds, but the average price for these products fell by 2.4 percent, the sixth year in a row that the annual average price for frozen other catfish products has declined.

U.S. catfish growers and processors face some uncertainty in 2002. Economic growth in the U.S. is expected to be slow, but strengthening in the second half of the year. A slowly growing economy is expected to generate a somewhat higher demand for seafood products, especially in the food-service sector. A strong dollar relative to most other currencies will encourage further growth in seafood imports. Although the markets for catfish products may be somewhat depressed, producers whose feeds are primarily grain-based should be able to take advantage of expected relatively low grain prices. **AO**

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In upcoming issues of Agricultural Outlook

- Outlook for livestock and poultry
- Public lands and western communities
- Russia in the WTO?—a "what-if" scenario

April Releases—National Agricultural Statistics Service

The following reports are issued electronically at 3 p.m. (ET) unless otherwise indicated.

www.ers.usda.gov/nass/pubs/pubs.htm

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- 1 Crop Progress (4 p.m.)
- 2 Weather - Crop Summary (noon)
- 3 Broiler Hatchery Egg Products
- 5 Dairy Products Prices (8:30 a.m.)
 Dairy Products
 Poultry Slaughter
 Poultry Slaughter - Annual Vegetables
- 8 Crop Progress (4 p.m.)
- 9 Weather - Crop Summary (noon)
- 10 Crop Production (8:30 p.m.)
 Broiler Hatchery
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 Milkfat Prices (8:30 a.m.)
 Turkey Hatchery
- 15 Potato Stocks
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World Agriculture & Trade



Calculating Damages in WTO Trade Disputes

The establishment of a system to settle disputes among member nations of the World Trade Organization (WTO) represents one of the major achievements of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). The WTO Dispute Settlement Body (DSB), which provides binding arbitration, marks an improvement over the earlier GATT system, which could mediate disputes but not enforce their resolution. Under the new system, a dispute proceeds through a set of clearly defined and timed stages, which encourages the disputants to settle their differences.

Since its inception in 1995, the WTO dispute settlement system has received over 200 notifications of trade disputes involving distinct matters. Yet only three dispute cases have gone through the final stage of the system, the retaliation stage, where the DSB awards damages for a country's failure to comply with its obligations under the WTO agreements. Two of these three cases involved agricultural trade and received much media attention in the late 1990s—the *Bananas* dispute and the *Hormones* dispute—and both involved the U.S. and the European Union (EU).

Those rare cases that reach the retaliation stage shed light on the WTO's rationale in determining the level of damages. The WTO methodology is very similar to other dispute resolution systems and is best viewed from a law and economics perspective. The principles reflected in the *Bananas* and *Hormones* damage determinations may carry important lessons for resolution of future trade disputes. Indeed, these principles could be immediately relevant, since the WTO may have to determine the damage amount in the current dispute between the EU and the U.S. over *Foreign Sales Corporations*. The EU may petition the WTO to award damages in this case if an agreement on compensation cannot be reached.

The General Agreement on Tariffs and Trade (GATT) is a multilateral agreement on rules governing the kinds of tariffs and trade policies that parties to the agreement can use. The GATT, established in 1947, was to be enforced by the International Trade Organization (ITO), but the U.S. and other countries opposed the ITO. Thus, from 1947 until the formation of the World Trade Organization (WTO) in 1994, the GATT existed as an agreement without an independent institution to enforce discipline on its members.

The WTO System: Dispute Resolution in Action

If one WTO member claims to suffer damages as a result of another member's failure to abide by its WTO obligations, it can notify the DSB of its complaint. Although the process encourages members to settle disputes bilaterally, the DSB will hold hearings and make rulings to resolve the dispute if bilateral settlement is not possible.

If the DSB finds a member's policies to be noncompliant with the WTO agreements, it allows a "reasonable period of time," usually about 15 months, for the member to bring its domestic policies into compliance. If the member does not comply, the complainant country can "retaliate" by petitioning the DSB for the right to suspend its tariff concessions (i.e., raise tariffs) on imports from the non-compliant member. A DSB arbitration panel ensures that the amount of trade damages awarded is equivalent to the level of damage or impairment suffered.

While much is made of the "retaliation" stage, the WTO dispute settlement system is designed so that very few cases ever reach this final stage. Most trade disputes are settled bilaterally during initial consultations or after the initial panel body ruling. As in civil courts, "pre-trial" settlement is the common outcome; relatively few cases or disputes are actually brought to trial.

In the dispute settlement process, each subsequent stage increases the incentives for the two parties to reach a resolution. This results in a "funnel-shaped" pattern of settlement, which has a strong economic rationale. First, each successive stage is costly: it increases expected cost for the defendant and reduces expected net compensation for the plaintiff (the complainant). Second, each stage forces the disputants to exchange or disclose more information about the facts of the case. A formal dispute continues to the next stage only if the plaintiff and defendant have substantially different subjective expectations of the alleged damage. As more information is disclosed, the facts of the case become clearer and expectations typically converge.

Usually—more than 95 percent of the time in DSB cases—the value of the difference in expectations becomes less than the costs of moving to the next formal step, so settlement occurs. The only *economically* rational basis for the disputants to persist to the trial phase is if their perceptions of the facts of the case remain divergent. (Of course, economic rationality may be only one of several determinants of disputant decisionmaking; for example, political considerations may also play a role.)

Calculating the Level Of Impairment

While no explicit methodology is mentioned in the WTO agreements for calculating the level of impairment, some observations on the rationale can be made from reviewing the DSB panel decisions in the *Hormones* case and, to a lesser extent, the *Bananas* case.

The DSB considers only gross trade.

Only gross trade revenue—the gross value of exports affected or impaired by the alleged WTO violation—is calculated. Effects from substitute or complement products, other trade concessions, or multilateral trade are not considered. For example, in the *Hormones* case, the DSB estimated the gross value of U.S. beef exports to the EU impaired by the EU ban on imports of beef produced with growth hormones. However, a portion of the export revenue lost to the EU was made up by increased U.S. exports to other countries, particularly to Asia. The lost U.S.-EU trade caused an increase in the excess supply of beef in the world market. This depressed world prices and allowed the U.S. to export additional quantities of beef to other countries.

The gross value of U.S. beef exports lost to the EU overestimates the actual damage to net U.S. export revenue. However, the DSB, in its assessment of the trade damage in the *Hormones* case, did not consider such net effects.

The DSB considers only bilateral trade.

The DSB considers only bilateral trade damages imposed on the complainant by the defendant: no third country effects are considered nor are indirect effects considered. For example, in the *Bananas* case,

GATT vs. WTO Dispute Settlement Systems: The *Hormones* Dispute

The WTO dispute settlement system has several advantages over the GATT dispute settlement system that existed before the Uruguay Round. Under the GATT system, a country could simply block the formation of a panel to address a dispute against it or veto an adverse ruling from the panel. Moreover, there was no way for the GATT to enforce a panel ruling even if it was adopted.

The WTO avoids these problems by establishing a set of clearly defined stages to the dispute process, deadlines for pushing disputes through these stages, and an enforcement procedure that allows the WTO to award damages for failure to comply with panel rulings. As a result, the WTO succeeded in addressing several high-profile trade disputes that were stalled under the GATT system, one of the most famous of which is the *Hormones* dispute.

The *Hormones* dispute centered on opposition by the U.S. and Canada to a 1989 ban by the European Union (EU) on imports of beef produced with growth hormones. The main claim of the U.S. against the EU hormone ban was that it had no scientific justification and was therefore illegal under the GATT agreements. When the U.S. attempted to create a GATT panel to address its claim, the EU simply refused formation of the panel. The U.S. retaliated by placing restrictions on exports of EU agricultural products. The EU then tried to form a panel to address these retaliatory measures, which was blocked by the U.S. As a result, the *Hormones* dispute was never fully addressed by the GATT.

In May 1996, the U.S. challenged the EU hormone ban under the WTO dispute settlement system. After initial consultations failed, a Dispute Settlement Body (DSB) panel was created, eventually ruling in August 1997 that the EU ban violated the WTO Agreement on Sanitary and Phytosanitary Measures. The EU appealed the panel ruling, which was upheld by a WTO Appellate Body in January 1998. Since only one appeal is allowed, the DSB gave the EU a period of 15 months (until May 1999) to comply with the appellate body ruling.

After the deadline expired, the U.S. sought WTO authorization to impose retaliatory tariffs. In July 1999, a DSB arbitration panel calculated the level of impairment to U.S. producers caused by the ban to be \$116.8 million a year and the WTO authorized U.S. retaliatory tariffs in that amount. While the *Hormones* dispute still remains to be settled, the WTO created a reasonable end-game to the dispute, which had not been accomplished under the GATT dispute procedure.

the U.S. argued that it should be compensated for the loss of transportation, packaging, and other forms of revenue that U.S. companies suffered from the lost banana exports to the EU. The WTO rejected this claim, since the lost exports came from countries in Central America, not the U.S. The DSB argued that only gross trade directly between the exporting and importing country can be considered.

The DSB panel focuses on determining the “facts” of the case. In hearings, the DSB is interested mainly in receiving a convincing story of exactly how the violation in question affected trade. In the *Hormones* case, for example, the DSB panel

cross-examined each country's account of what happened to trade as a result of the EU hormone ban and generally did not rely on results from complex economic methodologies or models to make its determination of damages. Such results can be useful only when accompanied by supporting facts and a convincing economic analysis.

The DSB final damage award appears to approximate the average of the two parties' estimates. In the *Hormones* dispute, the average of the U.S. and EU estimates of the damage to exports of High-Quality Beef (HQB) was US\$32.4 million. The final damage award determined by the

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DSB was US\$32.7 million. The average of the two parties' estimates of damage to exports of Edible Beef Offal (EBO) was US\$85.6 million; the final damage award was \$84.1 million. In the *Bananas* case, the final damage award of US\$191.4 million was close to half of the U.S. base estimate of US\$362.4 million.

Underlying Rationale for Determinations: Transparency...

These DSB guidelines for determining trade impairment may at first seem capricious or even erroneous. The observation that final damage awards are close to a simple average of the two parties' estimates could cause one to conclude that the DSB is simply "splitting the difference" between estimates. The guidelines also seem to ignore some of the economic effects from trade-distorting measures. In the *Hormones* dispute, third-country trade effects made up for some of the lost U.S. export revenue as a result of the EU hormone ban and might have decreased the total damage award if they were included in the assessment of damages.

However, there is a method to the WTO's reasoning. An extensive body of literature on dispute resolution systems, combined with knowledge of WTO principles, suggests a rationale for the DSB guidelines.

Dispute resolution panels employ methodologies that measure damages not only accurately but also simply and transparently. Methods must be relatively easy to understand for panel members and countries, as well as easy to explain to outsiders. Complex economic simulation models may provide greater accuracy, but arbitrators tend to prefer straightforward calculations, even if they are somewhat less theoretically satisfying than more complex methods.

The preference for simple and transparent methods probably explains why the DSB excludes third-country or indirect effects not directly related to the dispute in question. Each WTO dispute has covered trade only in specific products between specific countries. The inclusion of other products or countries can cloud the issue and even lead to further debate and controversy, something that the DSB and all dispute settlement systems wish to avoid. While

the methodology used in the *Hormones* case was not very sophisticated, it was straightforward in approximating the amount of damages.

...& Deterrence

Legal dispute settlement panels are charged with upholding the rule of law. In the case of the DSB, the law is the relevant WTO agreement. When calculating damages, dispute panels do not merely consider the economic cost caused by the violation in question—they also consider whether the damage award will deter future violations.

To compare this with a familiar situation, the fine for illegally parking in a space reserved for the disabled is probably much larger than the economic cost of the violation. However, if the fine were low, it would not be an adequate incentive to deter future violations. Panels that calculate damages must weigh the economic costs of individual violations against how such violations will affect the incentives of others.

For the DSB, damage awards that are too low can provide an incentive for countries to violate their obligations as WTO members. Low damage awards may occur if the DSB considers third-country effects, effects from other products, or indirect effects in its assessment of damages. The total economic effects of a trade-distorting measure such as a ban, tariff, or tariff-rate quota are usually much smaller than the gross effects of such measures on bilateral trade. If countries violate WTO agreements because the expected penalty is low, it could undermine confidence in the enforcement ability of the DSB.

At the same time, the DSB—in common with all formal dispute settlement systems—encourages parties to settle their disputes bilaterally. Expectation of unusually high damage awards might reduce a complainant's incentive to settle. Thus, the DSB must strike a balance between awarding damages that are too low or too high, to avoid creating the wrong incentives. Recognition that the DSB will work to strike this balance creates an incentive for the parties not to excessively overestimate or underestimate the amount of damages; if excessive differences lead to a failure to settle bilaterally, the parties know

that DSB scrutiny of the estimates will quickly identify unjustifiable damages and determine an award in line with amounts supported by the evidence. As a result, parties are likely to provide estimates that strengthen their credibility with the panel, leading to convergence, rather than divergence, of damage estimates. Thus, the final damage award is likely to approximate an average of the two parties' estimates, which may give the appearance that the DSB is simply "splitting the difference" when determining damages.

Finally, dispute resolution systems must abide by the principles under which the corresponding legal agreements were created. Trade concessions in the WTO agreements adhere to the principle of reciprocity under which countries have liberalized their markets over the past 53 years. The reciprocity principle implies that during rounds of negotiations for tariff reductions, each country should make *equivalent* tariff concessions. Since tariff concessions are negotiated as blocks of trade, this should also be the case for the suspension of tariff concessions (i.e., trade damages). Therefore, the DSB considers only gross trade (i.e., blocks of trade) when assessing trade damages.

Based on the *Hormones* and *Bananas* cases, the DSB settlement system appears to function like any other arbitration process: the arbitrators' job is to determine the amount of damage, and to make that determination, they want to hear a factual account of the case and employ a simple and transparent calculation or estimate of direct damages.

A party in a trade dispute would likely benefit from attending to this line of reasoning—by constructing qualitative arguments to support their damage calculation and by preparing answers to questions from the DSB panel to support those arguments. Complex methodologies or results from forecasting models might best be used only if the model assumptions are reasonable and the model results support, rather than replace, solid qualitative arguments. **AO**

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World Agriculture & Trade



Hsin-Hui Hsu

WTO Accession Will Increase China's Agricultural Imports

China is one of the world's largest agricultural economies, and its accession to the WTO and further integration into the world economy will lead to a wealthier and more stable international food system. Under the terms of accession, China's agricultural trade regime will be more open and responsive to global markets. Farmers in the U.S. are particularly well positioned to benefit from China's accession to the WTO because the farming systems and underlying resource endowments in China and the U.S. complement each other, providing opportunities for mutually beneficial trade.

WTO accession is the latest initiative in a process of liberalization in China's economy that will also benefit U.S. agricultural exports. A modest increase in China's imports of important bulk commodities in the next few years should result from the new trade regime under the WTO, but most benefits to U.S. farmers will occur several years down the road. China's imports of major commodities were expected to increase in the coming years due to internal market reforms and gradual economic liberalization even before China's formal accession to the WTO. Accession must be viewed in the context of China's broader economic development and its transition from a planned to a market economy.

China's WTO Agreement Revisited

As part of the agreement for WTO accession, China made far-reaching commitments to lower tariffs and reform its trading system. Central to China's agricultural policy commitments in the WTO agreement is a system of tariff-rate quotas (TRQs) for several major agricultural commodities. While many countries now regulate agricultural trade through a system of TRQs, China's TRQ regime is unique in that it also has provisions designed to break the monopoly power of state-owned trading enterprises. In addition to TRQs, China committed to lower tariffs on agricultural goods not covered by TRQs. China will also eliminate export subsidies, apply sound science for any sanitary and phytosanitary regulations, and limit potentially trade-distorting domestic support provided to its agricultural producers.

Under China's TRQ regime, a specified quantity of imports—i.e., a quota—may enter at minimal tariffs, while over-quota imports are charged much higher tariffs. The TRQ levels are set for each calendar year. It is important to note that these are not “minimum purchase” agreements, and actual imports may fall short of the full quota amounts.

The TRQ system is designed to ensure that market opportunity, not bureaucratic decree, will determine the level of imports. To loosen the control of China's state trading enterprises (STEs) over agricultural trade, a share of the TRQ for each commodity is set aside for private and other nonstate trading enterprises. In addition, if an STE has not contracted to import its share of the TRQ by August 15 of the year, then the noncontracted portion of the STEs' share may be made available to nonstate trading enterprises.

While TRQ levels and state trading components have been determined only through 2004 (2005 for edible oils), the levels, tariff schedules, and state trading components liberalize over time, and the in-quota tariffs are low. For example, the TRQ for corn rises from 5.9 million metric tons (mmt) to 7.2 mmt from 2002 to 2004, and the tariff for corn imported within the TRQ is only 1 percent. Also over this period, the TRQ share allocated to STEs falls from 68 to 60 percent, and the tariff for corn imported above the TRQ amount falls from 60 to 40 percent. While STE share of the TRQ does not fall during this period for wheat and rice, the over-quota tariff does decrease. The TRQs for soy, palm, and canola oils decline to a flat 9-percent tariff rate by 2005, eliminating the TRQ for these commodities.

China is still working out the details of how the TRQ regime will be implemented, and those details will determine just how open China's market will be. China agreed that TRQ certificates will be allocated to end users (such as millers, crushers, and feed lots), and the certificates will specify whether users must import their portion of the TRQ through a state-owned or a nonstate-owned trading enterprise.

In February, China announced the application process for acquiring a portion of the 2002 TRQ. The wording of the TRQ allocation rules suggests that end users that are private enterprises will be allocated the nonstate-owned portion of the TRQ, while end users that are STEs will be allocated the state-owned TRQ portion.

There are a variety of unanswered questions and unresolved issues in the TRQ allocation process that may affect China's agricultural trade. These include:

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China's TRQ Commitments at a Glance

	Wheat	Corn	Rice*	Cotton	Soy oil	Palm oil	Canola oil	Sugar	Wool
TRQ level	<i>Million metric tons</i>								
2002	8.5	5.9	4.0	0.82	2.5	2.4	0.9	1.8	0.27
2003	9.1	6.5	4.6	0.86	2.8	2.6	1.0	1.9	0.28
2004	9.6	7.2	5.4	0.89	3.1	2.7	1.1	1.9	0.29
2005	-	-	-	-	3.6	3.2	1.2	-	-
State share of TRQ	<i>Percent</i>								
2002	90	68	50	33	34	34	34	70	0
2003	90	64	50	33	26	26	26	70	0
2004	90	60	50	33	18	18	18	70	0
2005	-	-	-	-	10	10	10	-	0
In-quota tariff	<i>Percent</i>								
2002	1	1	1	1	9	9	9	20	1
2003	1	1	1	1	9	9	9	20	1
2004	1	1	1	1	9	9	9	15	1
2005	-	-	-	-	9	9	9	-	-
Above-quota tariff	<i>Percent</i>								
2002	71	60	60	54	48	48	48	50	42
2003	68	50	50	47	35	35	35	50	40
2004	65	40	40	40	22	22	22	50	38
2005	-	-	-	-	9	9	9	-	-

* The TRQ for rice is split evenly between long grain Indica rice and short grain Japonica rice.

- = No quota established.

Economic Research Service, USDA

- whether STEs will respond to market signals or continue to trade according to politically determined levels of imports and exports;
- the role of government in reallocation of unused TRQ at the end of the year; and
- whether imports that are designated as inputs into re-exported products can comprise a set portion of the TRQ.

Over time, pressure from domestic users who want access to imported wheat, corn, and cotton will likely reduce some initial rigidity and bureaucracy that may plague the TRQ system in its infancy. In addition to the TRQ regime, China has made substantial commitments to limit trade-distorting policies in agriculture, which go beyond the WTO commitments of many of its trading partners. China has also agreed to reforms that will liberalize domestic marketing institutions, giving foreign producers greater access to inland markets. Tariff rates on many important agricultural products not subject to TRQs are significantly below pre-WTO rates.

Effects of WTO Accession

USDA's Economic Research Service (ERS) estimated the effects of WTO accession on China's agricultural imports and international markets. Using the USDA baseline model, ERS analysts

altered aspects of the model to reflect China's more open and transparent trade regime, then compared the results with the February 2002 USDA baseline. China had not formally joined the WTO when 2002 baseline analysis was carried out, so its accession is not assumed in the baseline. The China component of the baseline model assumes rates of import protection under the rigid state trading system, by incorporating knowledge of 1) the difference between global prices and China's domestic prices, and 2) the inelastic price-response behavior of the STEs.

Under the TRQ regime, China will be less able to keep prices above international levels through state control of agricultural trade, so lower import protection rates and less rigid import price responses were incorporated into the model, with the results presented here as the WTO scenario.

Implementing the TRQ regime and tariff cuts is expected to have an immediate effect on China's agricultural imports. Imports of corn and wheat change the most under the WTO scenario, but imports of other key commodities also increase.

In the 2002 baseline projections, China is expected to be a minor net corn importer in the 2002-09 period (a minor net exporter for the first few years of this period). In the WTO scenario, China's

annual net corn imports were an average of 4.8 mmt higher than in the baseline, making China a net importer throughout the projection period. The 2002 baseline estimates China to be a wheat importer over the 2002-09 period, but wheat imports are 2.6 mmt per year higher in the WTO scenario, reaching an annual average of 7.3 mmt. While increases in corn and wheat imports are significant, China's annual imports of these commodities are still below TRQ levels for every year during 2002-09 under the WTO scenario, so there is little reason to expect the TRQs to fill in the near future.

China also imports more soybeans and soy oil under the WTO scenario—an annual average of nearly 0.5 mmt above the baseline for the period 2002-09. The small size of the import boost attributable to WTO accession is due mostly to the fact that the 2002 baseline already projects China to be a major soybean importer, with annual imports averaging over 21 mmt in the years 2002-09. Annual imports of soy oil are higher under the WTO scenario—by 0.2 mmt, a 25-percent increase from the 2002 baseline level of 0.8 mmt.

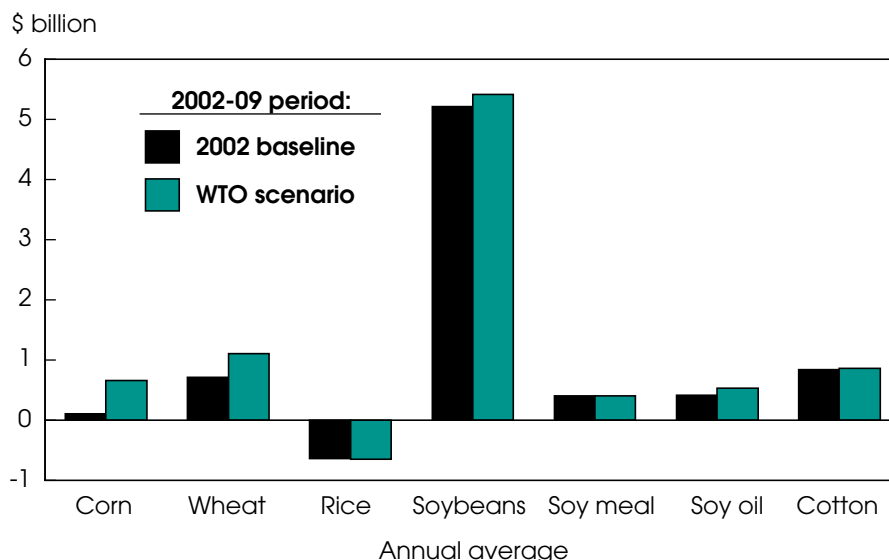
The ERS estimates are consistent with the intuition and observations of many China analysts. Studies have shown corn and wheat to be protected by China's trade

regime, and domestic users of these commodities in China have wanted more access to imports for the past several years. China's corn exports are also expected to stop due to the commitment not to use export subsidies. While soybeans have also been protected in the past, China has invested heavily in crushing capacity for soybeans and other oilseeds in the last few years, and these facilities are positioned to rely on soybean imports. Rice and cotton will be less affected by WTO-induced policy changes because recent changes in the procurement system have reduced internal prices to levels competitive with world prices.

But the ERS estimates do not take into account other non-WTO-related policy changes that may affect China's agricultural imports in the coming years. Recent changes concerning genetically modified (GM) crops may curb imports in the next few years. On March 20, 2002, China began requiring all GM crops to be labeled and accompanied by a safety certificate. In early March, China agreed, temporarily, that exporting countries' safety certifications will be honored while China carries out its own certification, which may take as long as 270 days. Future changes in this policy could impede imports of U.S. corn and soybeans, both of which contain GM varieties.

Producers in the U.S. are expected to gain from China's increased imports of wheat, corn, and other agricultural products. China's WTO accession will increase international demand and prices for these important commodities that U.S. producers export. Due to the increased export demand, farm grain prices increase, on average, by 0.5 to 3 percent above baseline levels over the 2002-09 period, and soybean prices increase an average of 2 percent. Average annual value of U.S. exports will increase by \$0.9 billion, and the annual value of cash receipts will increase by \$1 billion over the 2002-09 period. Taking the increase in production expenses into account, annual U.S. net farm income rises an average of \$0.8 billion over the period 2002-09 under the WTO scenario. These changes will also lead to marginally higher food retail prices.

China's Net Imports of Most Grains Will Increase With WTO Accession



Economic Research Service, USDA

The Long View

Beyond the immediate effects on import levels based on price differences and new trade rules, underlying forces will influence China's trade over a longer time horizon. Fundamentally, China's endowment of the basic factors of production, (land, labor, and capital) will determine which agricultural products are most profitable for China's farmers to specialize in and which to import from other producers. In addition, economic development already underway will boost food demand and commercialize China's subsistence-oriented farm operations. Finally, while China has made significant progress toward transition from a planned to a market economy, issues remain in this process that will affect future trade.

China's factor endowments will have the most profound effect on future agricultural trade, but these markets are still restructuring to allow farmers to choose optimal factor allocation. China has roughly 40 percent of the world's farmers but less than 10 percent of arable land, so China's comparative advantage clearly lies in labor-intensive agricultural products. Thus, the tendency will be for China to import more land-intensive grains and field crops, and export labor-intensive fruits, vegetables, and other specialty crops.

The adjustments needed to change the structure of production to take full advantage of trade liberalization are hampered by the slow mobility of factors of production. Land is still collectively owned by villages in China, and villages in turn allocate land use rights to farmers. While land rental is possible, it is not common, nor is it easy to transfer land to its highest valued use. Rural laborers cannot freely move to cities—where most nonfarm jobs are found—and formal farm credit institutions have only begun to emerge.

China's accession to the WTO bodes well for its long-term development prospects. As Chinese incomes grow and the population becomes more urbanized, diets will diversify and consumers will demand more meat, fish, fruits, vegetables, processed foods, and restaurant meals. Demand for feed grains will rise to support a growing livestock sector. This process will generate larger import demand in China and increased global opportunities for bulk feed grain exports to China. In addition, increased import demand for some high-value and processed agricultural products will generate opportunities for exporters.

Further economic development also will cause China's subsistence-oriented farm households to become wealthier and more integrated into the nonagricultural economy. When nonfarm earnings and farm

World Agriculture & Trade

The World Has Changed Since 1999

In the spring of 2000, ERS evaluated the potential trade effects of China's WTO accession using USDA's February 2000 baseline as the starting point. That analysis indicated that China's entry into the WTO would increase U.S. agricultural exports by an average of \$2 billion per year during the period 2000-09. Of this \$2 billion figure, \$1.5 billion was estimated using the global baseline model, as in the present analysis. But the 2000 analysis exceeded the annual average \$0.9-billion estimate in the present analysis for the 2002-09 period.

Circumstances surrounding USDA's view of China's domestic agricultural policy and participation in international commodity markets have changed significantly in the 2 years since the earlier analysis. For example, USDA's 2000 baseline projections were heavily influenced by a pessimism regarding China's commodity trade participation related to the effects of China's "Grain Bag" policy of 1996-99. The "Grain Bag" policy had generated substantial domestic supplies and subsequent strong pressure to limit imports. However, over the past 2 years this pessimism has been displaced by the central government's rejection of the "Grain Bag" policy, as well as a commitment to market reform and trade liberalization in advance of WTO accession. This policy change was initiated in 1999, and was first incorporated into the USDA longrun projections for the 2001 baseline report, which raised China's projected imports of many commodities. With higher imports already projected in the current baseline even without the assumption of WTO accession, the boost from accession is not as large as earlier estimated.

Another important policy change in the last 2 years concerns the central government's policy vis-à-vis China's domestic oilseed crush sector. In mid-2000, China reversed previous policy and made a strong commitment to support the domestic crushing sector through strict border control of vegetable oil imports (including a value-added tax, high tariffs, quotas, and licensing). At the same time, restrictions on soybean imports were greatly eased. These policy changes had the effect of cutting off vegetable oil and protein meal imports, while accelerating importation of whole oilseeds for the domestic crushing industry. It is likely that China's oilseed policy will come under increasing pressure with accession to the WTO.

marketing receipts rise, farm households are more likely to purchase food rather than grow it themselves, and instead produce commodities that bring the highest returns. This will facilitate movement away from staple grains toward higher valued labor-intensive products.

China has made remarkable progress in moving away from a planned economy, but some institutions have yet to reform. It is hard to imagine that a little over 20 years ago all agricultural production in China was carried out according to bureaucratic decree. Today, the government procures only a very small percentage of agricultural commodities, and most farmers make their own decisions about what to produce. Barriers to transporting goods between regions and provinces have fallen significantly, and markets are becoming more integrated. Even grain markets—where the state-owned bureaus handled more than 70 percent of all marketings for most of the

1990s—are showing clear patterns of market integration and price responsiveness.

While the government has reduced its role in the economy, it has yet to establish reliable market information systems, develop transportation and market infrastructure, build an agricultural finance system, and modernize its legal system to clarify property rights, enforce contracts, and resolve disputes. Without the institutional infrastructure to provide these essential services, market development will be slowed and farmers will be constrained in their ability to take advantage of the opportunities provided by international markets. WTO accession, however, will facilitate the development of market-supporting institutions in China.

China's accession to the WTO is a positive development for China, the international agricultural economy, and U.S. producers. Under the WTO, China's farmers will be

better able to access markets for labor-intensive products for which they have a comparative advantage. All residents of China, not just farmers, will benefit from the role that WTO accession will play in hastening China's overall economic development and its reform of outdated institutions. Integrating a large and diverse agricultural producer and consumer, such as China, into international markets will serve to alter world food production and trade on an unprecedented scale. China's rapidly growing and urbanizing economy will increase export opportunities for farmers in the U.S. and other countries.

Estimates of changes in China's agricultural trade due to the new trade regime under the WTO suggest China will substantially increase imports of corn and wheat under the more liberalized trade regime, and the increased international demand for these products will raise farm incomes in the U.S. On average, increased access to China's market under the WTO will expand annual U.S. farm incomes by \$0.8 billion over the period 2002-09.

In the big picture, formal accession to the WTO is a reflection of broader changes underway in China that will continue for years to come. WTO accession solidifies these changes and sets the stage for further reform as China's economy becomes more transparent and guided by the rule of law. For the same reasons policymakers in China strove for WTO membership, they also are working to liberalize markets and integrate China with the world economy in ways that are independent of the WTO. Continued economic development and transition to a market economy, along with trade liberalization, will provide greater opportunities for agricultural exports to China in the future. **AO**

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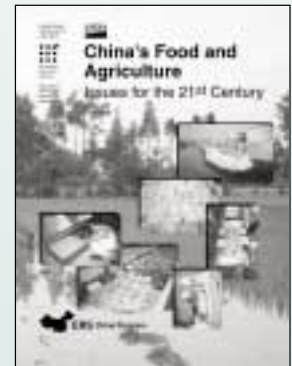
ERS researchers Fred Gale, Michael Price, Richard Stillman, Randall Schnepf, and Francis Tuan contributed to the analysis in this report.

China in the new century

- How will China's rising incomes and urbanization affect food demand?
- How much reliance on feed imports for expanding livestock numbers?
- A maturing retail sector: Wider channels for food imports?
- China's regions: Can their markets be integrated?
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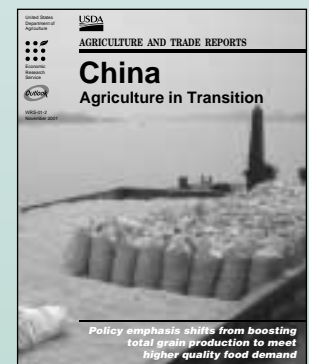


A focus on China's grain sector

China's grain sector faces pressure from both external competition and internal shifts in consumer preferences that could reshape the industry. What are the long-term expectations for China's agriculture in the face of its continued growth and its potential openness to trade?

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Resources & Environment



USDA photo: Ken Hammond

Proposed Requirements for Manure Nutrient Management: Potential Sector Impacts

Animal feeding operations (AFOs) produce most of the nation's livestock and poultry. Manure from these facilities is rich in nitrogen and phosphorus, and these nutrients are important for crop production. However, when their application to land exceeds crop needs, and when manure storage spills or leaks occur, the runoff can enter waterways and impair water quality. In December 2000, the U.S. Environmental Protection Agency (EPA) proposed bringing additional AFOs under Clean Water Act regulation and requiring improvements in manure management, including implementation of nutrient management plans by all regulated AFOs. A final decision is expected by December 2002 on the proposed rules, which could affect not only additional AFOs but also regional livestock and poultry production, prices, and net returns.

Increasing concentrations of AFOs geographically, as well as the general increase in the size of these facilities, are generating concerns over manure and water quality. Geographically concentrated production of livestock and poultry can generate manure nutrients in excess of what can be used agronomically within the watershed

while maintaining water quality. In 1997, 60-70 percent of manure nutrients were produced on operations that had insufficient land to absorb the nutrients at application rates not exceeding crop needs. Also over the past several years, major lagoon spills or leaks in Illinois, North Carolina, Iowa, Kentucky, Minnesota, Missouri, Montana, South Dakota, Utah, Virginia, Washington, and Wisconsin led to high-profile media coverage that raised public demand for greater regulation and preventive measures.

What EPA Has Proposed

EPA has proposed regulatory changes affecting all "Concentrated Animal Feeding Operations" (CAFOs) in response to growing public concern about water quality impairments from nutrients, pathogens, and pharmaceutically active compounds associated with manure and wastewater from AFOs. EPA currently defines a CAFO as an operation with at least 1,000 animal units (AUs). One proposed change would define CAFOs based on operation size alone, and at the extreme could include all AFOs with 300 AUs or more. This would bring under regulation the largest 20 percent of the AFOs nationwide

and approximately 70 percent of all AUs and manure production.

A second proposed change would require each CAFO to develop and implement a nutrient management plan (NMP) that restricts land application of livestock and poultry manure to rates that do not exceed the nutrient needs of whatever crop, including pasture, is on that land. CAFOs would apply manure to their own land to the extent permitted by the NMP, then arrange with other willing land operators to accept the balance of the manure as an alternative or supplement to commercial fertilizer. These producers would have to limit nutrient application to amounts not exceeding crop needs. When the manure is applied to another producer's land, the CAFO may or may not incur the additional cost of transporting and properly applying the manure, depending upon the specific arrangement. The proposed regulatory changes will be finalized by December 2002, with plans to publish them in the Federal Register by January 2003.

The principal costs a CAFO would incur to meet the NMP requirements are:

- fixed cost of developing and managing the NMP, estimated at approximately \$1,300 per year per operation, regardless of size;
- cost of land application of manure, estimated to average around \$2 per acre; and
- manure transport costs averaging between \$0.007 and \$0.14 per ton of manure, depending upon the distance to the land available for application.

These costs represent annual average costs across the nation and are taken from a recent EPA study on the costs of the proposed CAFO rule. CAFOs will likely consider these NMP costs along with other costs of manure storage and handling when deciding on the number and kind of animals to feed or even whether to stay in business. The NMP costs may be high enough to make unprofitable some marginally viable CAFOs. The collective decisions of CAFOs could have national and regional impacts on livestock, poultry, and crop production; on net returns to livestock and poultry producers; on nutrients generated; and on prices for leading

Resources & Environment

food commodities from the livestock and poultry sectors.

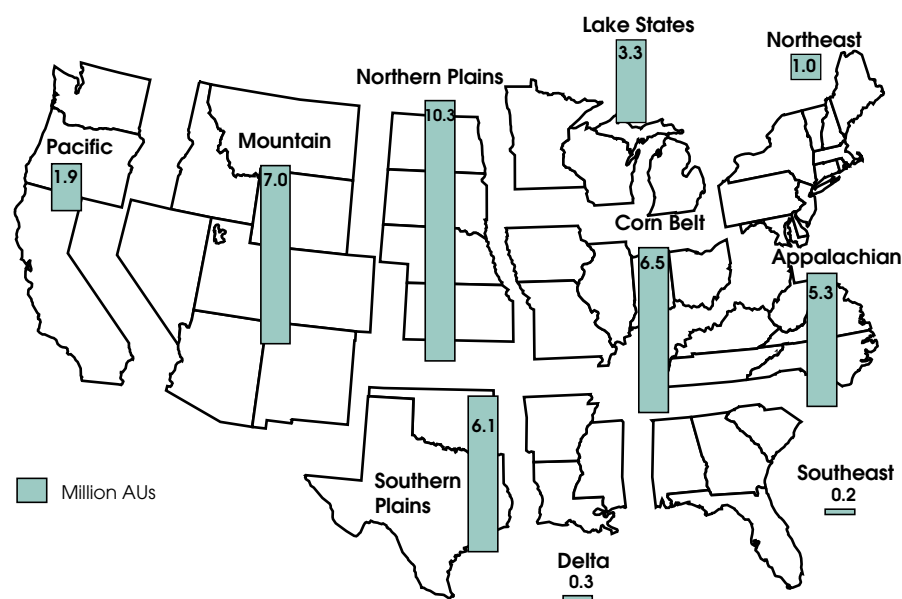
Two key factors affect manure transport costs and land application on a regional basis. The first is the amount of manure produced (based on the total AUs in CAFOs) relative to the overall amount of cropland within a region. The second factor deals with the amount of cropland that crop producers make available for application of manure under the conditions that CAFOs must meet (pasture and grazing lands are not considered in this analysis because of their low capacity to assimilate manure nutrients above those from current animal grazing.)

Willingness to make cropland available for manure application is an unknown but potentially major hurdle to managing manure nutrients. In the late 1990s, U.S. farmers applied manure to 9-17 percent of land in corn and soybeans as a supplement or substitute for commercial fertilizer. But will producers accept manure for 40 percent or more of an area's crop nutrient needs, or even 20 to 30 percent? Some crop producers may be reluctant to accept manure given the inherent variability in its nutrient content and the possibility that the manure nutrient content and/or the ratio of those nutrients will not meet the needs of the crops. Also, some producers may be concerned about the potential presence of pathogens or other undesirable elements. In addition, manure is more difficult to handle than commercial fertilizer. In any event, the greater the willingness of crop producers to accept manure the greater the availability of land for spreading manure and the lower the average cost of manure dispersal.

How Substantial Are National/Regional Impacts?

Using a 10-region agricultural model, analysts at USDA's Economic Research Service estimated the national/regional impacts of the proposed regulations. The model predicts how producers would alter livestock and poultry production over time in response to the costs of transporting manure under potential levels of manure acceptance by crop producers. The model examines how the changes in production affect national/regional supply and demand for crops and livestock, com-

Number of Animal Units (AUs) on Animal Feeding Operations Varies Regionally



Includes animal (livestock and poultry) feeding operations with 300 or more AUs (an AU = 1,000 pounds of live animal weight).

Economic Research Service, USDA

The U.S. Mathematical Programming Model for Agriculture

To estimate changes in production, nutrient generation, prices, and net returns to livestock and poultry producers, ERS uses a U.S. regional agricultural sector model designed for general-purpose economic, environmental, and policy analysis of the U.S. agricultural sector. The model represents agricultural markets and production enterprises in considerable detail and all elements of the model are calibrated to the latest available baseline, geographic, and cost-of-production data. The model is linked with regularly updated USDA production practice surveys, and geographic information system databases such as the National Resources Inventory.

The model predicts how changes in farm resources, environmental or trade policy, commodity demand, or technology will affect supply and demand of crops and livestock, farm prices and income, use of production inputs, participation rates and government expenditures for farm programs, and environmental indicators (such as erosion, nutrient and pesticide loadings, greenhouse gases, and others).

modity prices, farm income, and nutrient generation. Predictions from the analysis assume that NMP costs and land availability constraints affect all AFOs that feed 300 or more animal units—the smallest operation size being considered under the regulation proposal.

The analysis estimated and compared the results of three alternative manure acceptance scenarios with the results of a base-year situation that assumed no federal or state restrictions on land application of manure.

- **High-acceptance scenario.** Assumes that crop producers in each region will accept manure to satisfy up to 40 percent of the region's crop nutrient needs. (Agricultural sector impacts were found to be mostly negligible above 40 percent.)
- **Medium-acceptance scenario.** Assumes that crop producers in each region will accept manure to satisfy only up to 30 percent of the region's crop nutrient needs.

Resources & Environment

- **Low-acceptance scenario.** Assumes crop producers in each region will accept manure to satisfy only up to 20 percent of the region's crop nutrient needs.

The model allows the impacts of the NMP costs and manure acceptance constraints to work themselves out over time (i.e., over the next eight years). Only aggregate changes are estimated; the impacts of the proposed CAFO rules on individual operations cannot be addressed in this type of analysis. The analysis also assumes a stable amount of total cropland over time, a stable level of willingness to accept land application of manure, and a stable set of technologies for managing and using manure.

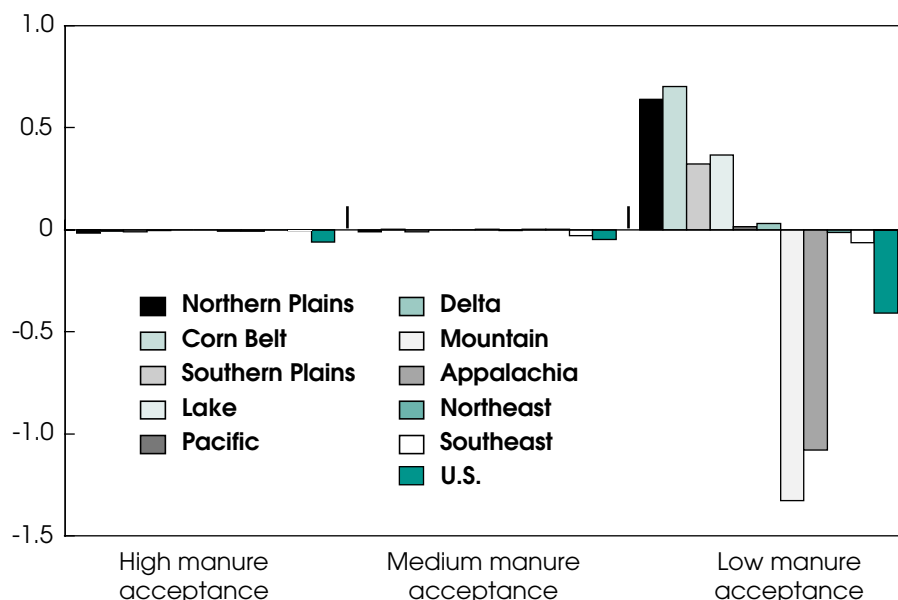
Production impacts. In general, the results suggest that the implementation of nutrient management plans on operations feeding 300 or more AUs will not be highly disruptive to livestock and poultry production if crop producers are generally willing to accept manure from CAFOs. Cropland availability is essential for NMPs. The more land that is in crop production in a region and in proximity to CAFOs, the less costly is the NMP requirement that manure nutrients be applied to cropland at proper rates.

The costs of developing and implementing NMPs could motivate some shift in animal production to regions with greater available land for manure application, while decreasing U.S. animal production overall. The potential production impacts are marginal in the high-acceptance scenario—all regions decrease AUs by less than 1 percent except for the Southeast, which declines by only 2 percent. Under the medium-acceptance scenario, the Southeast decreases AUs by 14 percent, while small production increases occur in the Northeast and Delta regions. Only in the low-acceptance scenario when land available for manure application is highly constrained does predicted production shift substantially among regions. AU decreases of 19-30 percent occur in the Southeast, Appalachia, and Mountain regions, while increases of 5-11 percent occur in the Lake, Corn Belt, Northern Plains, Delta, and Southern Plains.

Under Proposed Manure Nutrient Management Requirements:

Livestock and Poultry Production Could Decrease Nationally and Shift Regionally. . .

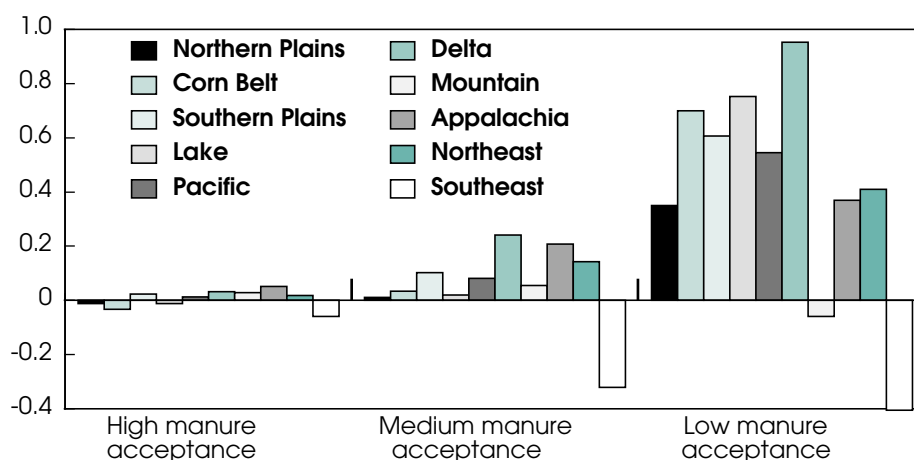
Change in AUs from base situation (million)



Number of animal units on animal feeding operations.
AU = Animal unit (1,000 pounds of live animal weight).

. . .and Aggregate Returns to AFOs Could Rise in Most Regions

Change in net returns from base situation (\$ billion)



Based on analysis using a regional agricultural model. Assumes animal feeding operations (AFOs) of 300 animal units and above would have to implement nutrient management plans. High, medium, and low acceptance levels reflect producers' willingness to accept manure to satisfy 40, 30, and 20 percent of total crop nutrient needs in the region.

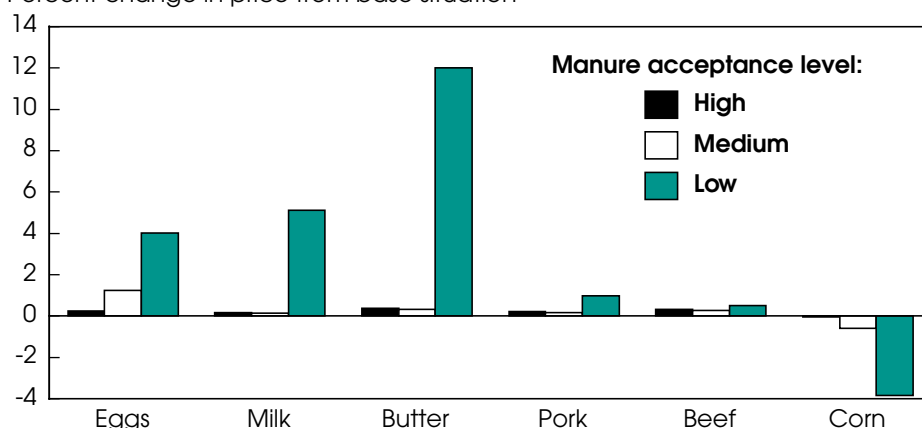
Economic Research Service, USDA

Regional changes in animal production translate into changes in manure nutrient generation. For the most part, these

changes mirror production changes. Where animal units increase, manure nutrients increase. The increases in

Proposed Requirements for Manure Nutrient Management Could Lead to Higher Animal Product Prices and Lower Prices for Corn

Percent change in price from base situation



Based on analysis using a regional agricultural model. Assumes animal feeding operations (AFOs) of 300 animal units and above would have to implement nutrient management plans. High, medium, and low acceptance levels reflect producers' willingness to accept manure to satisfy 40, 30, and 20 percent of total crop nutrient needs in the region.

Economic Research Service, USDA

manure nutrients are not detrimental to water quality per se, only if mismanaged. The threat to water quality can be reduced when manure nutrients replace or supplement commercial fertilizers and, according to EPA's proposed CAFO rules, total nutrients applied do not exceed the nutrient needs of the crops.

Decreasing livestock and poultry production would reduce the demand for animal feeds, which could lower certain feed crop prices (such as corn) and acreage devoted to those crops. These effects would induce changes in overall crop production acres. In general, the predicted changes to crop production are less than 3 percent throughout the U.S. The aggregate savings to crop producers from using manure nutrients instead of commercial fertilizer are potentially between \$2 and \$4 billion, depending on the scenario. These savings do not account for the cost of transporting the manure to crop producers willing to accept it, which may or may not be paid by the CAFOs depending upon the specific arrangements. Also, some of these savings may go to CAFOs that apply manure on their own land as a substitute for commercial fertilizer.

Impacts on prices and net returns.

Decreases in animal production nationwide translate into higher livestock and

poultry prices. These higher prices coupled with a decrease in animal feed cost (lower corn price from lower feed use) result in net gains for all unregulated AFOs, given the assumption that these AFOs do not adopt NMPs and thus avoid the associated costs. The effect on the CAFOs is less clear, since they will bear the cost of developing and implementing NMPs. Some CAFOs that are already marginally viable will likely be forced out of business, while others experience lower returns due to other costs associated with changes in manure handling and storage. The current analysis does not allow us to capture these losses.

Given the nature of supply and demand within the livestock and poultry sectors of the U.S. economy, higher output prices and lower input costs more than offset the costs of NMPs and the decreases in actual animal production, resulting in higher net revenues for the industry as a whole. The overall increase in net returns to all AFOs ranges from approximately 0.5 percent under the high acceptance scenario to 16 percent under the low-acceptance scenario. These results might be surprising to some because the cost of NMPs rises as transport costs go up. However, increases in prices for animal products caused by the relatively greater declines in production associated with low manure acceptance more than compensate for the cost increases.

Regional impacts differ. Most notably, model results show net returns to AFOs declining in the Southeast and Mountain regions when crop producers have relatively low manure acceptance. This decline reflects both increased net returns to unregulated AFOs and decreased returns to CAFOs. The requirement that nutrients be applied at rates that do not exceed crop needs forces CAFOs in these regions to decrease the number of animals to such a level that they do not receive the overall benefit from increased prices. When manure acceptance is at a medium level, net returns to AFOs only in the Southeast show decreases associated with the land application restrictions. However, when manure acceptance is high, several regions show slight decreases in net returns. Net returns to CAFOs fall because the increases in livestock and poultry prices are not as significant as under the low- and medium-acceptance scenarios and do not offset the increased cost of implementing NMPs.

Changes in prices for products from the livestock and poultry sector indicate, not surprisingly, that restricting animal production results in higher retail prices for such commodities as milk, butter, pork, and beef. While these higher prices adversely affect consumers, livestock and poultry producers experience greater net returns ranging between \$50 million and \$4 billion, depending on the level of manure acceptance and resulting transport costs. The potential losses to consumers from the higher retail prices are relatively small (less than 0.16 percent). A full calculation of the effects on consumers would also include any benefits derived from improved water quality. This analysis has focused only on the potential impacts of developing and implementing NMPs on the U.S. agricultural sector.



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For more information:

Manure Nutrients Relative to the Capacity of Cropland and Pastureland to Assimilate Nutrients: Spatial and Temporal Trends for the United States
www.nhq.nrcs.usda.gov/land/pubs/man-ntr.html

Resources & Environment

Livestock Operations Face Greater Restriction

Take an AFO, concentrate it to make a CAFO, mix in some NPDES and TMDL, and you have a brew that more livestock and poultry producers may have to imbibe in the near future. These terms are defined in current and proposed regulations, and their related requirements can affect an operation's facilities, practices, and costs. Behind the terms is an increasing public interest and government effort to reduce actual and potential pollution from animal manure.

According to the U.S. Environmental Protection Agency, an **AFO** is an Animal Feeding Operation that meets the following criteria:

- Animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period.
- Crops, vegetation, forage growth, or postharvest residues are not sustained in the normal growing season over any portion of the lot or facility.

A **CAFO** or Concentrated Animal Feeding Operation is currently defined by EPA as an AFO that:

- confines more than 1,000 animal units (AUs), where 1,000 AUs are defined as 1,000 slaughter and feeder cattle, 700 mature dairy cows, 2,500 swine each weighing more than 25 kilograms, 30,000 laying hens or broilers (if a facility uses a liquid manure system), or 100,000 laying hens or broilers (if a facility uses continuous overflow watering);
- confines between 300 and 1,000 AUs and discharges pollutants into waters through a manmade ditch, flushing system, or similar manmade device, or directly into waters that pass through the facility.

CAFOs are considered point sources (specific, identifiable pollutant sources) in EPA's National Pollutant Discharge Elimination System (**NPDES**) program, and in theory need permits to operate. The current CAFO definition contains an exemption for facilities that discharge only in the event of a 25-year, 24-hour storm event.

To mitigate actual and potential water quality impacts posed by large animal feeding operations, EPA has proposed revised regulations for CAFOs. Among the major proposed changes for the NPDES permit and Effluent Limit Guidelines are:

- change in size thresholds for determining which animal feeding operations are considered CAFOs and therefore require a permit (one option would include all AFOs over 300 AUs);
- elimination of the 25-year/24-hour storm exemption;
- making a nutrient management plan part of the NPDES permit, which would cover land application of animal waste;
- adopting a zero discharge requirement with no overflow allowance for swine, veal, and poultry CAFOs; and

- requiring installation of depth markers for open liquid impoundments.

USDA has increased and enhanced the assistance available in recent years to livestock producers for nutrient management planning and storage. In addition, more research on alternative uses of manure and alternative storage technologies could help alleviate problems in the future.

EPA estimates that up to 44,000 operations might be covered by the proposed regulations, depending on the size thresholds that are finally put in place. Currently, about 12,000 operations are of sufficient size to be considered CAFOs, but only about 3,900 (33 percent) actually have permits.

EPA is also proposing increased use of the Total Maximum Daily Load (**TMDL**) provisions of the Clean Water Act (33 U.S.C. § 1313(d)). A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. The TMDL provisions are intended to be the second line of defense for protecting the quality of surface water resources. When technology-based controls on point sources are inadequate for water to meet State water quality standards, Section 303(d) of the Clean Water Act requires states to identify those waters and to develop TMDLs. The TMDL for the watershed is the sum of individual wasteload allocations for point sources, load allocations for nonpoint sources and natural background, and a margin of safety. Wasteload allocations for point sources are enforced through NPDES discharge permits. Load allocations for nonpoint sources are not currently regulatory, but can be met through voluntary approaches.

Proposed revisions to TMDL regulations would require TMDLs for impaired waters even where the sole source of impairment is nonpoint source pollution, and "reasonable assurance" that the load allocation (for nonpoint sources such as agriculture) will in fact be implemented. Demonstration of reasonable assurance must show that management measures or other control actions address the particular pollutant, and that they are implemented.

While not creating new authorities, the proposed changes would focus attention on the role pollution from AFOs (and the rest of agriculture) plays in contributing to water quality impairment, and could be an incentive for states to elevate pressure on AFOs to adopt alternative management practices. There are more than 20,000 waters identified nationally as being impaired and possibly requiring a TMDL. The top impairments in 1998 were sediment, nutrients, and pathogens. AFOs can be a source of all three pollutants.



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Farm Families' Savings: Findings from the ARMS Survey

Farmers are not unique in their ability or willingness to save. They are influenced by the same factors that affect savings in other sectors of the population—age, education, cultural and other socioeconomic attributes and, of course, income levels. The level and source of farm household income is governed by how the household allocates its own labor and financial assets. These allocation decisions affect the composition and stability of household income and therefore the level and disposition of household savings.

Continued large government outlays for disaster assistance and other unearned compensation are viewed by some as evidence of farmers' inability or unwillingness to save. Policies that would provide incentives to encourage farmers to save as one means to stabilize incomes and better prepare for retirement are thus being discussed. A recent report by the Employee Benefits Research Institute points out that saving for retirement is small, not well understood, and a subject of an ongoing debate in the general population. Further, 63 percent of current workers expect to keep working for pay after formal retirement.

The concept of farmer savings accounts is not new to the farm bill debate (AO May 1999) and such accounts have been implemented in other countries, including Australia and Canada (Net Income Savings Account program). Recent evidence from USDA's Agricultural Resource Management Study (ARMS) survey provides information about the savings behavior of farmers, focusing not only on how much farmers save but also on how they save. Savings rates are sensitive to characteristics of farms and farmers, and the portfolio of savings and investment instruments varies considerably across the sector. Savings and farm family financial assets at the household level are distinguished from farm business investments.

Clearly, savings are beneficial both for farmers and others. Among the principal rationales for saving are:

- to maintain a certain standard of living after retirement (retirement or life-cycle motive);
- to provide for the education of children and grandchildren;
- to purchase big-ticket items such as equipment and appliances; and
- to guard against unexpected income shocks (precautionary motive).

Households are vulnerable to various sources of risk (in earnings, health, and mortality), and the markets for insuring against such risks are often unavailable, or when available the coverage is not complete. In instances where insurance is available, many farmers view the coverage as unaffordable or consider it an acceptable risk to purchase no insurance.



Jack Harrison

But, if farmers are able to save during “good times” and draw on the reserves in “bad times,” then the impact from relatively large farm income swings can be dampened and there would be less need for government policies that decrease income variability. In other words, farmers can self-insure against risk by “income smoothing.” Savings play a direct role in helping farm households maintain a standard of living from year to year since they can be used to maintain consumption during income shortfalls. The key to understanding the role of “precautionary savings” is to identify how these savings can be used as complements to other risk-management strategies. The financial impact of income variability depends not only on the degree to which production and revenue risks are insured but also on the extent to which farm household income sources are effectively diversified.

What Is Known About Farmers' Savings & Investments?

Previous analysis of family savings behavior has been limited by data availability. Information on household savings (which can be held either as farm inventory, cash, or some type of financial or nonfinancial asset) is generally inferred from data on consumption and income or estimated by examining changes in net worth. To avoid inference errors, the 1999 ARMS queried farm operators about nonfarm assets owned by the operator and by other members of the operator's household. Along with information about assets and liabilities of the household's farm business, ARMS collected information on several different categories of household assets.

In order to provide some context for interpreting the survey results, a general characterization of the economic climate in 1999 is necessary. By most accounts, 1999 represented the bot-

Special Article

tom of the most recent downturn in commodity prices. Record receipts for farm commodities were achieved in 1996, followed shortly thereafter by a collapse in commodity prices, which led to a dramatic decline in the value of agricultural production and lower market returns.

At the same time, the general economy was in the eighth year of an economic expansion, with relatively low interest rates and unemployment, substantial stock market gains, and increases in home values. This discrepancy between prosperity in the general economy and lower market returns in the farm economy created a conflicting financial planning environment for many farm families. In 1999, 78 percent of farm households saved out of current income; surveys of the general population suggest that 50-60 percent of families saved during the last decade. Within the general population, families headed by the self-employed were more likely to be savers (63 percent) than all families.

Farm households, like their nonfarm counterparts, have diverse financial portfolios. Farmers were asked about four classes of savings:

- retirement accounts (excluding Social Security);
- stocks and bonds;
- cash and other liquid accounts like checking and savings; and
- real estate and other assets not part of the farm business.

Approximately 31 percent of the total assets of an average farm household are held in other nonfarm assets—real estate and businesses aside from the farm, off-farm houses, recreational vehicles, and other assets. One-fourth of nonfarm assets are in the form of retirement accounts (IRA, 401K, Keogh, and others). Nonfarm assets held as cash, checking, money market accounts, bonds, and certificates of deposit (CDs) comprise 21 percent, and stocks and mutual funds comprise 22 percent.

For all U.S. households, financial assets represent about 35 percent of total assets, with retirement accounts one of the largest components. Excluding entitlement to Social Security, 49 percent of households in the general population held tax-deferred retirement accounts, while 35 percent of farm families participated in tax-deferred savings plans.

Off-farm investment by farm households in various forms has increased in recent years. The average farm household possesses both financial and physical assets, of which physical assets represent the largest share (almost 90 percent). The most important asset of the farm business is land, which constitutes more than 70 percent of the total value of farm assets. Other assets include farm machinery (tractors, combines, and other implements), land improvements, buildings, and livestock.

Total assets of an average farm household increased 34 percent in nominal terms, from \$423,659 in 1993 to \$633,525 in 1999. Farm business assets increased 23 percent in nominal dollars, from an average of \$354,747 in 1993 to \$435,438 in 1999. Meanwhile, average household nonfarm assets more than dou-

Defining Terms

Life cycle: Series of stages through which an individual passes during a lifetime. The concept can provide a well-defined linkage between the consumption patterns of the individual and expectations of income and savings as one passes from childhood, through education, training, participation in the workforce, and into retirement. For farm operators it can trace the stages of the business from entry into farming, growth of the farm, consolidation, and retirement and transfer of the farm.

Precautionary motives: The motivation behind farm households' saving to meet unexpected shortfalls in income (such as health, market returns) and smooth consumption.

Precautionary saving: Currency plus any holdings quickly convertible into cash without great loss. Defined as the ratio of total money available in the form of liquid assets, such as checking, savings in money market accounts, bonds, and certificates of deposit (CDs) to total savings.

Income smoothing: Offsetting the effects of swings in income, often by accumulating savings. Saving during "good times" can help farm households maintain their standard of living from year to year.

Average propensity to save: The ratio of savings to farm household income at any given income level.

Financial assets: Financial assets include money held in cash; bank accounts (checking and saving accounts, certificates of deposit, and money market accounts); money invested in tax-exempt bonds; taxable bonds; tax-deferred accounts such as Individual Retirement Accounts, 401K, Keoghs, and other retirement accounts; other financial assets (whole life insurance, trusts).

bled during the same period, from \$67,912 in 1993 to \$198,087 in 1999.

Investment in various types of nonfarm assets varies by level of farm household income. Farm households with incomes of \$100,000 or more have less money invested in checking, money market accounts, and CDs than farm households with incomes of less than \$15,000.

Households of residential/lifestyle farms have more money invested in retirement accounts than any other group—off-farm income is the main source of income for these families, and off-farm jobs often have fringe benefits that include contributions into retirement or profit-sharing accounts. Off-farm employment usually provides access to affordable health care, which reduces the need for farm operators with off-farm jobs to save against unexpected health issues. Households of limited-resource farms have 63 percent of their nonfarm assets in cash, checking, money market accounts, bonds, and CDs and other liquid nonfarm assets.

Households of very large farms have the highest investment in nonfarm assets (\$258,354 on average), followed by residential/lifestyle farm operator households (\$236,577) with substantial investment in other nonfarm assets and in IRA, 401K, and Keogh plans. Limited-resource farm households have the least amount of nonfarm investment (\$67,011). Almost all farm households (93 percent) have money invested in cash and checking, money market accounts, bonds, and CDs. Seventy percent of farm households have assets in other nonfarm assets, and nearly 65 percent of farm households have money invested in some form of retirement account.

Investment in nonfarm assets differs among operator age groups, showing the classic pattern suggested by the life-cycle theory of household savings and investment: over an individual's life cycle, wealth is built up during working years and consumed during retirement. Off-farm investment is highest (\$271,522) in the 55-64 age group, followed by the 45-54 age group (\$205,208). The majority of investment assets is in the form of retirement accounts and other nonfarm assets. These two age groups best represent the wealth accumulation phase of the life cycle. Households headed by operators younger than 35 have the least amount of off-farm investment. However, almost 50 percent of their off-farm assets are invested in nonfarm assets such as real estate and businesses not part of the farm—off-farm houses, recreational vehicles, and other assets.

Formal education tends to be a good indicator of nonfarm investment as well as earning ability over the long term (both from farm and off-farm work). The 1999 ARMS data show a positive correlation between investment in nonfarm assets and educational level of the farm operator. Farm operators with less formal education have more money in cash, checking, money market accounts, bonds, and CDs compared with other groups. Producers with a higher level of formal education are more likely to take advantage of off-farm investment opportunities. Those with graduate-level schooling and beyond have distributed their nonfarm assets approximately equally into retirement accounts (31 percent) and other nonfarm assets (32 percent).

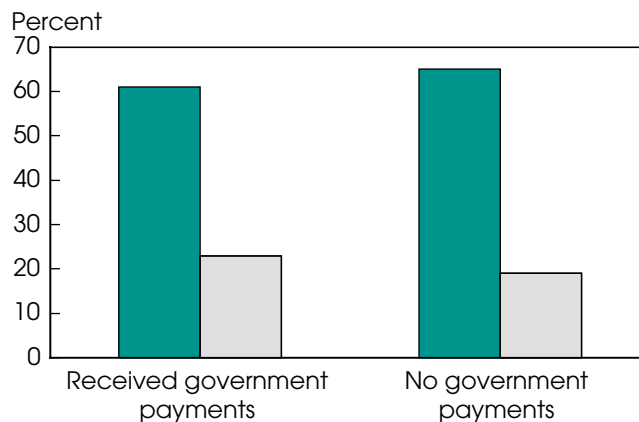
The Role of Government Payments, Insurance, & Income Sources

To help determine which farm households need incentives to save, and which would benefit from additional savings, ARMS data were used to separate farm households into three different groups, that were then compared with their counterparts:

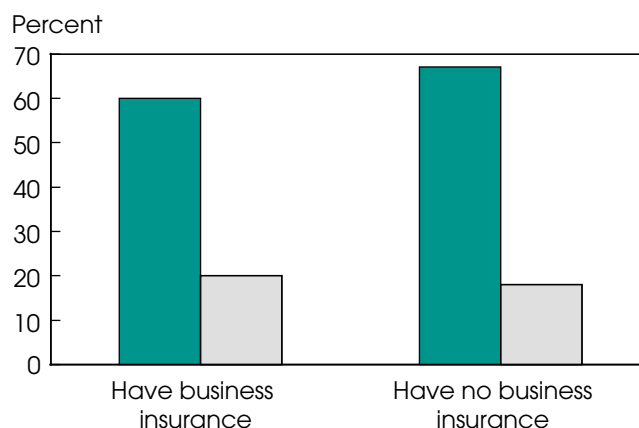
- farm households who receive government payments and those who do not;
- farm households who purchase some type of insurance and those who do not; and
- farm households who depend mainly on farming for their income (greater than 80 percent of all income), and households with multiple sources of income.

The analysis shows that savings rates are lower for farm households that receive government payments than for those that did

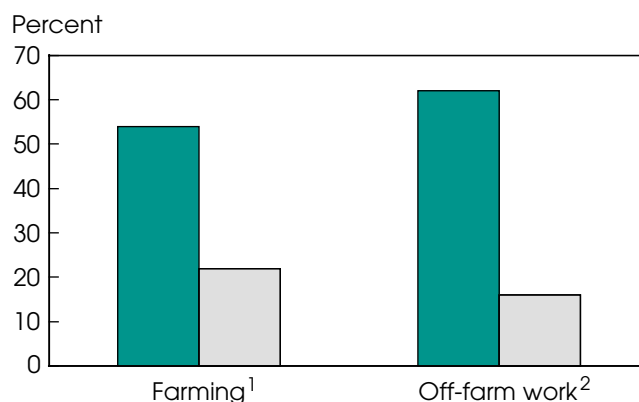
Precautionary Savings Are Higher for Farmers Who Participate in Government Programs, . . .



. . . Who Have Farm Business Insurance, . . .

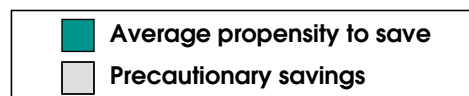


. . . and Whose Income Source Is Mainly Farming



1. Households that depend on farming for at least 80 percent of their income.

2. Households that earn their income entirely from off-farm sources, of which wages and salaries make up 50 percent of total off-farm income.



Propensity to save is the ratio of savings to farm household income. Precautionary savings is the ratio of household liquid assets to total savings. Source: Agricultural Resource Management Study (ARMS) Survey, 1999, USDA.

Economic Research Service, USDA

Special Article

not. This suggests either that government payments become a substitute for savings, or that program participation decreases the amount of perceived income risk. Farm households that received payments from the government (42 percent) saved less on average than those who received no payments. However, farm households that received government payments have higher precautionary savings—the ratio of funds in checking, savings accounts, money market accounts, bonds, CDs, and cash to total savings and investment off the farm.

Buying insurance is another way farms and farm households cope with uncertainties in income. In 1999, approximately 78 percent of farm businesses bought some type of insurance. Farm households that bought business insurance have on average a lower propensity to save compared with the uninsured. As with government payments, farm households that purchased business insurance have higher precautionary savings compared with farm households who did not.

Finally, farm households' income sources are associated with the way they save. In 1999, approximately 13 percent of farm households depended on farming as their major source of income. This group's average propensity to save was 54 percent, and precautionary savings was 22 percent. On the other hand, farm households that earned their entire income from off-farm sources, of which wages and salaries made up 50 percent of their total off-farm income, have a higher average propensity to save (62 percent) and lower precautionary savings (16 percent).

Farm bill legislation has addressed the issue of risk management in farming from several perspectives, including commodity program adjustments, crop insurance, and new forms of insurance such as revenue insurance. More recently, tax-deferred savings accounts have been considered as an additional complementary risk management tool. Data collected by USDA show that, like nonfarm households, farmers are diversified in their choice of investments. Farm households have money invested in a variety of outlets ranging from stocks and bonds to other business pursuits. Even so, farmers have a substantial portion of their wealth in real estate.

Differences in savings rates between farm program participants and other farm households suggest that further investigation is necessary to determine the cause and effect of the difference in behavior. Providing some portion of government payments in the form of tax-deferred savings accounts will likely increase savings. The effectiveness of the additional savings in smoothing income will need to be examined in the context of its impacts on use of other risk management tools. For example, a savings program may not have the desired impact if fewer farmers enroll in crop insurance as a result of tax-deferred savings accounts.

The lower savings rate observed for farms that purchased insurance provides evidence of the complex interaction with use of other risk management tools. The analysis presented here also suggests that farm households that depend on farming as their main source of income may need some additional incentives to increase their savings.

The disparity in savings rates may merely reflect the economic environment in agriculture during 1999, with lower levels of farm income encouraging more farm families to save. The real dilemma may be getting more farmers to save during times of economic prosperity.

A key consideration in evaluating savings-incentive policy is the adequacy of the amount saved to provide income smoothing, and the interaction between household savings and farm business liquidity. On average, farm household savings amount to only 6 percent of farm business expenses. This may be sufficient to handle minor income shocks, including those from unexpected input cost increases such as a rise in fuel prices, but would not compensate for much larger or catastrophic occurrences. **AO**

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For further information:

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Upcoming Reports—USDA's Economic Research Service

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April

10 World Agricultural Supply and Demand Estimates (8:30 a.m.)

11 Oil Crops Outlook**
Cotton and Wool Outlook**
Rice Outlook**

12 Wheat Outlook (9 a.m.)**

15 Livestock, Dairy, and Poultry Situation and Outlook**

17 Tobacco Outlook**

18 Vegetables & Melons Outlook**
Agricultural Outlook (3 p.m.)*

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Statistical Indicators

Summary Data

Table 1—Key Statistical Indicators of the Food & Fiber Sector

	Annual			2001				2002		
	2000	2001	2002	I	II	III	IV	I	II	III
Prices received by farmers (1990-92=100)	96	102	97	100	107	107	95	--	--	--
Livestock & products	97	106	97	103	110	111	100	--	--	--
Crops	96	99	97	97	104	104	91	--	--	--
Prices paid by farmers (1990-92=100)										
Production items	116	120	117	121	120	120	118	--	--	--
Commodities and services, interest, taxes, and wage rates (PPITW)	120	123	122	124	124	123	122	--	--	--
Cash receipts (\$ bil.)	194	206	--	49	46	52	60	--	--	--
Livestock	99	109	--	27	27	28	27	--	--	--
Crops	94	97	--	22	19	24	32	--	--	--
Market basket (1982-84=100)										
Retail cost	171	177	--	175	177	178	179	--	--	--
Farm value	97	106	--	102	106	110	108	--	--	--
Spread	210	215	--	215	215	215	217	--	--	--
Farm value/retail cost (%)	20	21	--	20	21	22	21	--	--	--
Retail prices (1982-84=100)										
All food	168	173	178	172	173	174	175	177	177	178
At home	168	173	178	172	173	174	175	177	177	178
Away from home	169	174	179	172	173	175	176	177	178	179
Agricultural exports (\$ bil.) ¹	50.8	52.8	54.5	13.8	12.5	12.3	15.2	14.2	12.7	12.4
Agricultural imports (\$ bil.) ¹	38.9	39.0	40.0	9.9	10.0	9.4	10.0	9.9	9.7	10.4
Commercial production										
Red meat (mil. lb.)	46,150	45,643	45,201	11,096	11,148	11,351	12,048	11,329	11,133	11,292
Poultry (mil. lb.)	36,427	37,238	38,150	9,011	9,437	9,348	9,442	9,325	9,730	9,550
Eggs (mil. doz.)	7,034	7,144	7,240	1,750	1,778	1,788	1,828	1,770	1,790	1,815
Milk (bil. lb.)	167.6	165.3	169.4	41.3	42.7	40.6	40.8	42.2	43.8	41.7
Consumption, per capita										
Red meat and poultry (lb.)	214.7	211.1	211.0	51.7	51.9	53.0	54.5	52.3	52.6	52.4
Corn beginning stocks (mil. bu.) ²	1,787.0	1,717.5	--	1,717.5	8,529.6	6,043.0	3,924.0	1,899.1	--	--
Corn use (mil. bu.) ²	9,514.8	9,740.3	--	3,104.3	2,487.5	2,122.2	2,026.3	3,144.1	--	--
Prices ³										
Choice steers--Neb. Direct (\$/cwt)	69.65	72.43	72-77	79.11	75.13	70.33	65.13	69-70	72-76	74-80
Barrows and gilts--IA, So. MN (\$/cwt)	44.70	45.81	42-45	42.83	52.05	51.05	37.30	40-41	47-49	44-48
Broilers--12-city (cents/lb.)	56.20	59.10	57-61	57.80	59.20	61.10	58.50	56-57	58-60	59-63
Eggs--NY gr. A large (cents/doz.)	68.90	67.20	63-66	75.80	63.30	61.40	68.20	67-68	57-59	58-62
Milk--all at plant (\$/cwt)	12.33	14.93	12.85- 0.00 13.45	13.37	15.30	16.53	14.50	13.10- 13.30	12.20- 12.70	12.45- 13.25
Wheat--KC HRW ordinary (\$/bu.)	3.08	3.33	--	3.45	3.41	3.18	3.30	--	--	--
Corn--Chicago (\$/bu.)	1.97	2.03	--	2.03	1.96	2.10	2.01	--	--	--
Soybeans--Chicago (\$/bu.)	4.86	4.58	--	4.48	4.48	4.89	4.45	--	--	--
Cotton--avg. spot 41-34 (cents/lb)	57.47	39.68	--	52.66	39.86	35.58	30.62	--	--	--
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Farm real estate values ⁴										
Nominal (\$ per acre)	713	740	798	844	887	926	974	1,020	1,080	1,130
Real (1996 \$)	795	806	848	879	904	926	955	988	1,031	1,057
U.S. civilian employment (mil.) ⁵	128.1	129.2	131.1	132.3	133.9	136.3	137.7	139.4	140.9	--
Food and fiber (mil.)	23.1	23.5	24.1	24.5	24.2	24.1	24.2	24.4	24.1	--
Farm sector (mil.)	1.9	1.8	1.9	2.0	2.0	1.9	1.8	1.8	1.7	--
U.S. gross domestic product (\$ bil.)	6,318.9	6,642.3	7,054.3	7,400.5	7,813.2	8,318.4	8,781.5	9,268.6	9,872.9	--
Food and fiber--net value added (\$ bil.)	924.8	957.6	1,026.6	1,048.2	1,078.9	1,101.9	1,132.7	1,180.6	1,264.5	--
Farm sector--net value added (\$ bil.) ⁶	75.5	70.2	77.8	73.5	85.7	82.6	74.0	66.9	82.0	--

-- = Not available. Annual and quarterly data for the most recent year contain forecasts. 1. Annual data based on Oct.-Sep. fiscal years ending year indicated. 2. Sep.-Nov. first quarter; Dec.-Feb. second quarter; Mar.-May third quarter; Jun.-Aug. fourth quarter; Sep.-Aug. annual. Use includes exports and domestic disappearance. 3. Simple averages, Jan.-Dec. 4. As of January 1. 5. Civilian labor force taken from "Monthly Lab Review," Table 18--Annual Data: Employment Status of the Population, Bureau of Labor Statistics, U.S. Department of Labor. 6. The value-added data presented here are consistent with accounting conventions of the National Income and Product Accounts, U.S. Department of Commerce.

U.S. & Foreign Economic Data

Table 2—U.S. Gross Domestic Product & Related Data

	Annual			2000			2001			
	1998	1999	2000	II	III	IV	I	II	III	IV
<i>Billions of current dollars (quarterly data seasonally adjusted at annual rates)</i>										
Gross Domestic Product	8,781.5	9,268.6	9,872.9	9,857.6	9,937.5	10,027.9	10,141.7	10,202.6	10,224.9	10,253.2
Gross National Product	8,778.1	9,261.8	9,860.8	9,841.0	9,919.4	10,032.1	10,131.3	10,190.9	10,213.8	--
Personal consumption expenditures	5,856.0	6,250.2	6,728.4	6,674.9	6,785.5	6,871.4	6,977.6	7,044.6	7,057.6	7,174.0
Durable goods	693.2	760.9	819.6	813.8	825.4	818.7	838.1	844.7	840.6	909.5
Nondurable goods	1,708.5	1,831.3	1,989.6	1,978.3	2,012.4	2,025.1	2,047.1	2,062.3	2,057.5	2,053.1
Food	852.6	899.8	957.5	953.5	967.2	971.4	982.0	987.0	993.5	1,003.8
Clothing and shoes	284.8	300.9	319.1	317.0	321.6	323.5	325.7	322.4	318.5	321.9
Services	3,454.3	3,658.0	3,919.2	3,882.8	3,947.7	4,027.5	4,092.4	4,137.6	4,159.4	4,211.4
Gross private domestic investment	1,538.7	1,636.7	1,767.5	1,792.4	1,788.4	1,780.3	1,722.8	1,669.9	1,624.8	1,518.6
Fixed investment	1,465.6	1,578.2	1,718.1	1,717.0	1,735.9	1,741.6	1,748.3	1,706.5	1,682.6	1,633.3
Change in private inventories	73.1	58.6	49.4	75.4	85.5	38.7	-25.5	-36.6	-57.8	-114.7
Net exports of goods and services	-151.7	-250.9	-364.0	-350.8	-380.6	-390.6	-363.8	-347.4	-294.4	-319.3
Government consumption expenditures and gross investment	1,538.5	1,632.5	1,741.0	1,741.1	1,744.2	1,766.8	1,805.2	1,835.4	1,836.9	1,879.9
<i>Billions of 1996 dollars (quarterly data seasonally adjusted at annual rates) ¹</i>										
Gross Domestic Product	8,508.9	8,856.5	9,224.0	9,229.4	9,260.1	9,303.9	9,334.5	9,341.7	9,310.4	9,342.7
Gross National Product	8,508.4	8,853.0	9,216.4	9,217.7	9,247.2	9,311.7	9,329.1	9,335.5	9,304.9	--
Personal consumption expenditures	5,683.7	5,968.4	6,257.8	6,226.3	6,292.1	6,341.1	6,388.5	6,428.4	6,443.9	6,538.5
Durable goods	726.7	817.8	895.5	886.5	904.1	899.4	922.4	938.1	940.2	1,021.3
Nondurable goods	1,686.4	1,766.4	1,849.9	1,844.9	1,864.1	1,866.8	1,878.0	1,879.4	1,882.0	1,893.3
Food	819.4	847.8	881.3	881.5	886.2	886.4	887.3	886.1	883.8	887.6
Clothing and shoes	290.4	312.1	335.3	333.3	339.8	339.9	342.7	344.1	344.7	349.1
Services	3,273.4	3,393.2	3,527.7	3,509.6	3,540.2	3,588.8	3,605.1	3,629.8	3,640.4	3,657.1
Gross private domestic investment	1,558.0	1,660.1	1,772.9	1,801.6	1,788.8	1,778.3	1,721.0	1,666.2	1,620.5	1,516.6
Fixed investment	1,480.0	1,595.4	1,716.2	1,719.2	1,730.1	1,732.1	1,740.3	1,696.4	1,671.6	1,623.8
Change in private inventories	76.7	62.1	50.6	78.9	51.7	42.8	-27.1	-38.3	-61.9	-120.0
Net exports of goods and services	-221.1	-316.9	-399.1	-392.8	-411.2	-421.1	-404.5	-406.7	-411.0	-418.5
Government consumption expenditures and gross investment	1,483.3	1,531.8	1,572.6	1,577.2	1,570.0	1,582.8	1,603.4	1,623.0	1,624.1	1,663.7
GDP implicit price deflator (% change)	1.2	1.4	2.3	2.2	1.9	1.8	3.3	2.1	2.2	-0.3
Disposable personal income (\$ bil.)	6,355.6	6,618.0	7,031.0	6,993.7	7,081.3	7,189.8	7,295.0	7,363.2	7,576.4	7,436.0
Disposable pers. income (1996 \$ bil.)	6,168.6	6,320.0	6,539.2	6,523.7	6,566.5	6,634.9	6,679.0	6,719.2	6,917.5	6,777.3
Per capita disposable pers. income (\$)	23,031	23,708	24,889	24,801	25,029	25,331	25,634	25,798	26,457	25,885
Per capita disp. pers. income (1996 \$)	22,354	22,641	23,148	23,134	23,209	23,376	23,470	23,541	24,157	23,592
U.S. resident population plus Armed Forces overseas (mil.) ²	270.5	272.9	275.4	275.0	275.6	276.3	--	--	--	--
Civilian population (mil.) ²	269.0	271.5	273.9	273.5	274.2	274.9	--	--	--	--
	Annual			2001						
	1998	1999	2000	Jan	Aug	Sep	Oct	Nov	Dec	2002 Jan
<i>Monthly data seasonally adjusted</i>										
Total industrial production (1992=100)	138.8	144.7	151.6	148.9	144.5	142.9	142.1	141.8	141.3	141.3
Leading economic indicators (1996=100)	105.4	108.8	109.9	109.0	109.8	109.1	109.2	110.1	111.5	112.4
Civilian employment (mil. persons)	131.5	133.5	135.2	135.9	134.4	135.0	134.6	134.3	134.1	133.5
Civilian unemployment rate (%)	4.5	4.2	4.0	4.2	4.9	5.0	5.4	5.6	5.8	5.6
Personal income (\$ bil. annual rate)	7,426.0	7,777.3	8,319.2	8,604.0	8,775.9	8,771.0	8,761.5	8,759.1	8,785.9	8,821.0
Money stock-M2 (daily avg.) (\$ bil.) ³	4,386.3	4,655.0	4,942.3	4,987.2	5,265.1	5,383.6	5,373.2	5,417.0	5,458.9	5,469.2
Three-month Treasury bill rate (%)	4.81	4.66	5.85	5.27	3.39	2.87	2.22	1.93	1.72	1.66
AAA corporate bond yield (Moody's) (%)	6.53	7.04	7.62	7.15	7.02	7.17	7.03	6.97	6.76	6.55
Total housing starts (1,000) ⁴	1,616.9	1,640.9	1,568.7	1,666	1,559	1,585	1,518	1,616	1,579	1,678
Business inventory/sales ratio ^{5 6}	1.44	1.41	1.40	1.43	1.42	1.45	1.39	1.39	1.39	--
Retail & food services sales (\$ bil.) ^{6 7}	2,906.7	3,149.2	3,388.82	287.7	292.9	286.4	304.7	295.9	296.6	295.6
Food and beverage stores (\$ bil.)	421.6	441.4	465.29	39.6	40.2	40.4	40.5	40.7	40.8	40.8
Clothing & accessory stores (\$ bil.)	149.4	159.7	168.48	14.4	14.2	13.3	14.0	14.0	14.4	14.6
Food services & drinking places (\$ bil.)	272.6	286.3	306.07	26.6	27.0	26.4	26.7	27.0	28.4	27.7

-- = Not available. 1. In October 1999, 1996 dollars replaced 1992 dollars. 2. Population estimates based on 1990 census. 3. Annual data as of December of year listed. 4. Private, including farm. 5. Manufacturing and trade. 6. In July 2001, all numbers were revised due to a changeover from the Standard Industrial Classification System to the North American Industry Classification System. 7. Annual total.

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Table 3—World Economic Growth

	Calendar year									
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	<i>Real GDP, annual percent change</i>									
World	3.1	2.8	3.5	3.4	1.9	2.8	3.9	1.4	1.3	3.2
less U.S.	2.7	2.8	3.4	3.0	1.0	2.3	3.8	1.4	1.1	3.4
Developed economies	2.7	2.3	3.1	3.0	2.1	2.6	3.4	1.1	0.8	2.6
less U.S.	2.1	2.2	2.8	2.3	1.0	1.9	3.0	1.0	0.3	2.4
United States	4.0	2.7	3.6	4.4	4.3	4.1	4.1	1.2	1.7	2.9
Canada	4.7	2.7	1.5	4.4	3.3	4.6	4.3	1.3	1.0	3.5
Japan	0.6	1.5	5.1	1.6	-2.5	0.2	2.2	-0.4	-1.8	0.9
Australia	4.5	4.5	3.8	4.7	4.5	4.4	2.0	2.3	3.2	3.3
European Union	2.7	2.5	1.6	2.5	2.8	2.6	3.5	1.6	1.2	3.0
Transition economies	-8.1	-1.3	-0.8	1.4	-1.4	3.4	6.2	4.5	3.5	4.0
Eastern Europe	3.9	5.6	4.0	2.7	2.6	2.4	3.8	2.6	2.5	4.4
Poland	5.2	7.0	6.0	6.8	4.8	4.1	4.2	1.1	1.1	4.1
Former Soviet Union	-14.1	-5.4	-4.0	0.5	-4.4	4.2	8.1	5.8	4.1	3.7
Russia	-12.6	-4.1	-3.4	0.9	-4.9	5.0	8.3	5.0	3.8	3.6
Developing economies	6.3	5.3	5.8	5.3	1.2	3.4	5.7	2.3	2.9	5.8
Asia	8.8	8.3	7.4	5.8	0.4	6.3	7.0	3.6	4.4	6.6
East Asia	9.7	8.7	7.7	7.0	1.9	7.4	8.1	4.1	4.9	6.6
China	12.8	10.5	9.6	8.8	7.8	7.1	8.0	7.5	7.1	7.9
Taiwan	7.1	6.4	6.1	6.7	4.6	5.4	5.9	-1.9	1.9	4.0
Korea	8.2	8.9	6.8	5.0	-6.7	10.7	9.0	2.8	3.8	5.7
Southeast Asia	8.3	8.3	7.3	4.0	-7.5	3.5	5.9	1.7	2.8	6.4
Indonesia	7.5	8.2	7.8	4.7	-13.2	0.7	4.8	3.2	3.3	6.8
Malaysia	9.2	9.8	10.0	7.3	-7.4	5.8	8.4	0.4	2.3	6.6
Philippines	4.4	4.7	5.8	5.2	-0.8	3.2	4.0	3.4	3.8	4.1
Thailand	9.0	8.9	5.9	-1.7	-10.2	4.2	4.4	1.5	2.6	6.0
South Asia	6.6	7.1	6.3	4.2	6.1	6.1	4.6	4.2	4.6	6.7
India	7.3	7.7	7.0	4.6	6.8	6.5	4.8	4.5	4.8	7.0
Pakistan	3.9	5.1	3.9	1.0	2.5	4.0	3.4	2.6	3.2	5.0
Latin America	5.3	1.4	3.7	5.2	1.8	0.0	3.9	0.5	0.3	5.1
Mexico	4.4	-6.2	5.2	6.8	4.9	3.5	6.9	-0.3	1.4	5.6
Caribbean/Central	4.1	3.8	3.6	6.4	6.8	6.9	4.9	1.5	2.6	6.1
South America	5.6	3.1	3.3	4.8	1.0	-1.1	3.1	0.7	-0.1	4.9
Argentina	5.8	-2.8	5.5	8.1	3.9	-3.2	-0.3	-4.2	-9.1	5.3
Brazil	5.9	4.2	2.8	3.2	-0.1	0.8	3.9	1.8	1.8	4.7
Colombia	5.8	5.2	2.1	3.4	0.5	-4.3	2.2	1.5	2.5	5.9
Venezuela	-2.3	3.7	-0.5	6.5	-0.7	-6.1	3.2	4.9	2.7	3.0
Middle East	-0.3	4.4	4.7	4.4	2.7	-0.8	5.0	-0.7	2.4	4.6
Israel	6.9	7.0	5.1	3.2	2.6	2.2	5.9	0.5	2.1	4.8
Saudi Arabia	0.5	0.5	1.4	1.9	2.3	-1.1	3.5	3.0	2.5	2.3
Turkey	-5.5	7.2	7.0	7.5	3.1	-4.7	7.2	-6.8	2.0	7.5
Africa	3.2	2.9	5.2	2.8	3.1	2.6	3.8	3.4	3.1	3.7
North Africa	3.9	1.5	6.5	2.6	5.6	3.9	4.0	4.4	4.1	3.8
Egypt	3.9	4.7	5.0	5.5	5.6	6.0	5.2	3.3	4.2	4.3
Sub-Saharan	2.6	3.9	4.3	3.0	1.3	1.7	3.5	2.7	2.4	3.6
South Africa	3.2	3.1	4.2	2.5	0.6	1.2	3.4	2.1	1.8	3.5
	<i>Consumer prices, annual percent change</i>									
Developed economies	3.1	2.6	2.6	2.4	2.1	1.5	1.4	2.3	2.4	1.7
Transition economies	635.8	274.2	133.8	42.5	27.3	21.8	43.9	20.0	16.4	10.7
Developing economies	49.2	55.3	23.2	15.4	9.9	10.5	6.8	6.0	5.9	5.1
Asia	10.8	16.0	13.2	8.3	4.8	7.7	2.5	1.9	2.8	3.3
Latin America	194.6	200.3	36.0	21.2	12.9	9.9	8.8	8.1	6.2	4.9
Middle East	29.4	37.3	39.1	29.6	27.7	27.6	23.2	19.2	18.9	14.5
Africa	39.0	54.7	35.3	30.2	14.2	10.8	11.5	13.6	12.6	8.0

The last 3 years are either estimates or forecasts. Sources: Oxford Economic Forecasting; International Financial Statistics, IMF.

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Farm Prices

Table 4—Indexes of Prices Received & Paid by Farmers, U.S. Average

	Annual			2001					2002	
	1999	2000	2001	Feb	Sep	Oct	Nov	Dec	Jan	Feb
<i>1990-92=100</i>										
Prices received										
All farm products	95	96	102	100	105	94	93	95	95	99
All crops	96	96	99	98	101	88	88	95	93	101
Food grains	91	85	91	91	92	90	88	91	88	85
Feed grains and hay	86	86	91	90	92	86	86	92	90	90
Cotton	85	82	65	80	64	57	49	53	48	49
Tobacco	102	107	107	116	108	109	114	113	111	109
Oil-bearing crops	83	85	80	80	81	74	77	78	76	76
Fruit and nuts, all	111	99	106	83	121	120	108	92	84	86
Commercial vegetables	110	123	130	147	132	101	101	149	162	189
Potatoes and dry beans	100	93	102	85	102	93	106	116	117	130
Livestock and products	95	97	106	102	110	104	99	96	97	97
Meat animals	83	94	97	98	96	91	86	85	90	93
Dairy products	110	94	114	100	130	120	110	103	103	102
Poultry and eggs	110	107	116	112	122	121	117	109	109	100
Prices paid										
Commodities and services, interest, taxes, and wage rates (PPITW)	115	120	123	124	123	123	122	122	122	122
Production items	111	116	120	121	119	118	117	117	117	117
Feed	100	102	108	108	110	109	108	108	107	106
Livestock and poultry	95	110	111	108	112	113	107	110	109	110
Seeds	121	124	132	125	134	134	134	134	134	134
Fertilizer	105	110	122	140	111	109	107	104	105	106
Agricultural chemicals	121	120	121	121	121	121	123	122	122	122
Fuels	93	134	118	135	127	103	98	77	82	83
Supplies and repairs	121	124	128	126	129	129	129	129	128	128
Autos and trucks	119	119	118	119	116	117	119	119	118	117
Farm machinery	135	139	142	142	140	141	141	141	141	141
Building material	120	121	121	121	121	121	121	121	121	121
Farm services	116	119	121	120	122	120	120	120	120	120
Rent	113	110	117	117	116	116	116	117	120	120
Interest payable per acre on farm real estate debt	106	112	114	114	116	116	116	114	109	109
Taxes payable per acre on farm real estate	120	123	124	124	123	123	123	124	126	126
Wage rates (seasonally adjusted)	135	140	146	150	143	148	148	148	148	148
Prod. items, interest, taxes & wage rates (PITW)	113	118	122	123	121	121	120	119	120	119
Ratio, prices received to prices paid (%)*	83	81	83	81	85	76	76	78	78	81
Prices received (1910-14=100)	605	612	649	634	668	598	591	605	605	629
Prices paid, etc. (1910-14=100)	1,531	1,594	1,643	1,654	1,642	1,635	1,627	1,618	1,619	1,619
Parity ratio (1910-14=100) (%)*	40	39	40	38	41	37	36	37	37	39

Values for the two most recent months are revised or preliminary. *Ratio of index of prices received for all farm products to index of prices paid for commodities and services, interest, taxes, and wage rates. Ratio uses the most recent prices paid index.

Data for this table are taken from the publication *Agricultural Prices*, which is produced monthly by USDA's National Agricultural Statistics Service (NASS) and is available at <http://usda.mannlib.cornell.edu/reports/nassr/price/pap-bb/>. For historical data or for categories not listed here, call the NASS Information Hotline at 1-800-727-9540, or access the NASS Home Page at <http://www.usda.gov/nass>.

Table 5—Prices Received by Farmers, U.S. Average

	Annual ¹			2001					2002	
	1998	1999	2000	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Crops										
All wheat (\$/bu.)	2.65	2.48	2.65	2.83	2.85	2.86	2.88	2.89	2.87	2.85
Rice, rough (\$/cwt)	8.89	5.93	5.75	5.72	4.78	4.36	4.08	4.07	3.94	4.13
Corn (\$/bu.)	1.94	1.82	1.85	1.96	1.91	1.84	1.85	1.98	1.97	1.93
Sorghum (\$/cwt)	2.97	2.80	3.15	3.47	3.46	3.30	3.29	3.26	3.34	3.24
All hay, baled (\$/ton)	84.60	76.90	83.00	86.90	98.60	99.40	97.10	93.70	93.00	90.40
Soybeans (\$/bu.)	4.93	4.63	4.75	4.46	4.53	4.09	4.16	4.20	4.22	4.19
Cotton, upland (¢/lb.)	60.20	45.00	56.00	48.50	38.50	34.50	29.50	32.20	28.90	29.70
Potatoes (\$/cwt)	5.56	5.77	4.95	5.26	6.05	5.28	5.97	6.85	6.90	7.51
Lettuce (\$/cwt) ²	16.10	13.30	17.50	23.20	26.20	11.30	11.20	28.60	26.20	36.50
Tomatoes, fresh (\$/cwt) ²	35.20	25.80	31.40	28.70	20.80	28.80	28.90	25.00	40.50	26.80
Onions (\$/cwt)	13.80	9.78	11.40	14.10	13.20	10.40	9.91	9.42	9.48	8.39
Beans, dry edible (\$/cwt)	19.00	16.40	15.30	15.30	18.10	19.20	22.10	21.40	21.10	25.30
Apples for fresh use (¢/lb.)	17.30	21.30	17.90	15.20	18.70	24.20	23.30	22.40	21.70	21.40
Pears for fresh use (\$/ton)	291.00	294.00	264.00	252.00	463.00	413.00	350.00	342.00	282.00	276.00
Oranges, all uses (\$/box) ³	4.29	5.54	--	2.91	6.53	5.12	3.19	3.44	3.89	4.42
Grapefruit, all uses (\$/box) ³	2.00	3.27	--	2.24	6.89	5.29	3.06	2.30	1.98	1.70
Livestock										
Cattle, all beef (\$/cwt)	59.60	63.40	68.60	74.70	69.00	66.60	63.90	64.60	67.10	70.40
Calves (\$/cwt)	78.80	87.70	104.00	109.00	106.00	99.20	96.40	100.00	102.00	104.00
Hogs, all (\$/cwt)	34.40	30.30	42.30	39.20	45.10	40.50	35.00	33.30	37.70	38.40
Lambs (\$/cwt)	72.30	74.50	79.40	80.10	53.40	52.90	54.10	61.70	65.50	--
All milk, sold to plants (\$/cwt)	15.46	14.38	12.40	13.00	17.00	15.70	14.40	13.40	13.40	13.30
Milk, manuf. grade (\$/cwt)	14.24	12.84	10.54	11.10	16.20	14.80	12.40	12.50	12.40	12.20
Broilers, live (¢/lb.)	39.30	37.10	33.60	37.00	43.00	41.00	39.00	37.00	37.00	34.00
Eggs, all (¢/doz.) ⁴	66.80	62.20	61.80	68.20	56.70	62.60	65.80	59.00	62.30	55.90
Turkeys (¢/lb.)	38.00	40.80	40.70	36.30	40.40	44.00	44.30	38.50	34.10	34.10

-- = Not available.

Values for the two most recent months are revised or preliminary. 1. Season-average price by crop year for crops. Calendar year average of monthly prices for livestock. 2. Excludes Hawaii. 3. Equivalent on-tree returns. 4. Average of all eggs sold by producers including hatching eggs and eggs sold at retail.

Data for this table are taken from the publication *Agricultural Prices*, which is produced monthly by USDA's National Agricultural Statistics Service (NASS) and is available at <http://usda.mannlib.cornell.edu/reports/nassr/price/pap-bb/>. For historical data or for categories not listed here, call the NASS Information Hotline at 1-800-727-9540, or access the NASS Home Page at <http://www.usda.gov/nass>.

Producer & Consumer Prices

Table 6—Consumer Price Indexes for All Urban Consumers, U.S. Average (not seasonally adjusted)

	Annual			2001					2002	
	1999	2000	2001	Feb	Sep	Oct	Nov	Dec	Jan	Feb
	<i>1982-84=100</i>									
Consumer Price Index, all items	166.6	172.1	177.1	175.8	178.3	177.7	177.4	176.7	177.1	177.8
CPI, all items less food	167.0	172.9	177.8	176.6	179.0	178.2	177.8	177.0	177.4	178.2
All food	164.1	167.8	173.1	171.3	174.1	174.9	174.6	174.7	175.8	175.9
Food away from home	165.1	169.0	173.9	171.8	175.1	175.6	175.8	176.0	176.4	177.0
Food at home	164.2	167.9	173.4	171.8	174.3	175.2	174.7	174.7	176.2	176.0
Meats ¹	142.3	150.7	159.3	156.5	161.5	161.8	161.2	160.0	160.0	159.9
Beef and veal	139.2	148.1	160.5	158.6	161.1	161.0	161.0	160.2	159.7	160.7
Pork	145.9	156.5	162.4	157.9	167.8	167.2	164.7	163.0	163.7	163.3
Poultry	157.9	159.8	164.9	161.8	165.4	169.6	166.4	167.7	166.8	167.8
Fish and seafood	185.3	190.4	191.1	193.0	189.1	189.5	189.2	189.4	189.2	186.0
Eggs	128.1	131.9	136.4	142.9	131.4	132.3	138.4	133.5	138.4	138.6
Dairy and related products ²	159.6	160.7	167.1	163.6	169.4	170.8	171.2	170.8	169.9	170.1
Fats and oils ³	148.3	147.4	155.7	152.6	158.5	159.5	155.6	156.9	158.3	157.2
Fresh fruits	266.3	258.3	265.1	253.5	266.0	268.7	268.6	270.7	276.4	263.5
Fresh vegetables	209.3	219.4	230.6	240.6	228.2	229.1	228.6	230.4	251.6	258.1
Potatoes	193.1	196.3	202.3	186.8	218.3	216.3	203.4	205.2	213.4	225.7
Cereals and bakery products	185.0	188.3	193.8	191.9	195.1	195.2	194.9	195.3	196.7	197.6
Sugar and sweets	152.3	154.0	155.7	155.8	156.6	156.4	154.9	156.1	158.4	158.5
Nonalcoholic beverages ⁴	134.3	137.8	139.2	139.9	139.2	139.9	139.5	138.5	139.5	140.0
Apparel										
Footwear	125.7	123.8	123.0	122.6	122.9	124.9	123.7	120.6	117.1	119.5
Tobacco and smoking products	355.8	394.9	425.2	408.5	444.0	429.9	446.7	431.7	432.8	449.3
Alcoholic beverages	169.7	174.7	179.3	177.7	180.4	180.8	181.2	180.9	181.8	182.6

1. Beef, veal, lamb, pork, and processed meat. 2. Included butter through December 1997. 3. Includes butter as of January 1998.

4. Includes fruit juices as of January 1998.

This table is compiled with data provided by the Bureau of Labor Statistics (BLS). BLS operates a website at <http://www.bls.gov> and a Consumer Prices Information Hotline at (202) 691-7000.

Table 7—Producer Price Indexes, U.S. Average (not seasonally adjusted)

	Annual			2001					2002	
	1998	1999	2000	Feb	Sep	Oct	Nov	Dec	Jan	Feb
	<i>1982=100</i>									
All commodities	124.4	125.5	132.7	137.4	133.3	130.3	130.1	128.0	128.5	128.6
Finished goods ¹	130.6	133.0	138.0	141.4	141.6	139.7	138.4	137.2	137.5	137.7
All foods ²	132.4	132.2	133.0	135.6	139.2	138.2	136.2	136.1	136.7	138.1
Consumer foods	134.3	135.1	137.2	140.0	142.9	142.2	140.5	140.4	141.1	142.7
Fresh fruits and melons	90.0	103.6	91.4	91.8	96.6	101.9	101.7	115.3	107.0	92.8
Fresh and dry vegetables	139.5	118.0	126.7	143.9	125.1	110.8	107.2	120.5	144.8	176.9
Dried and dehydrated fruits	124.4	121.2	122.9	116.4	118.5	118.6	119.0	120.3	120.1	120.1
Canned fruits and juices	134.4	137.8	140.0	142.6	144.3	143.7	143.3	143.4	143.3	143.8
Frozen fruits, juices and ades	116.1	123.0	120.9	116.7	111.7	111.8	113.0	117.8	117.5	119.7
Fresh vegetables except potatoes	137.9	117.7	135.0	168.6	132.3	112.3	105.9	121.0	146.1	188.7
Canned vegetables and juices	121.5	120.9	121.2	121.4	125.3	126.5	128.2	127.8	128.2	128.3
Frozen vegetables	125.4	126.1	126.0	128.5	128.8	130.0	128.8	128.8	129.8	130.6
Potatoes	122.5	126.9	100.5	86.6	151.3	140.1	141.2	149.4	180.1	179.0
Eggs for fresh use (1991=100)	90.1	77.9	84.9	89.6	71.7	77.0	86.6	79.2	89.4	74.5
Bakery products	175.8	178.0	182.3	185.4	188.4	189.0	189.2	188.7	188.9	189.7
Meats	101.4	104.6	114.3	118.8	120.8	120.0	113.5	114.9	112.9	117.9
Beef and veal	99.5	106.3	113.7	125.7	117.7	117.5	111.0	113.3	111.7	120.0
Pork	96.6	96.0	113.4	109.3	125.7	123.4	113.7	114.3	111.9	115.0
Processed poultry	120.7	114.0	112.9	112.3	121.4	121.0	120.5	116.3	116.4	115.5
Unprocessed and packaged fish	183.0	190.9	198.1	210.5	192.8	181.4	183.2	176.8	183.1	202.1
Dairy products	138.1	139.2	133.7	135.9	153.5	150.5	145.4	140.3	140.9	139.8
Processed fruits and vegetables	125.8	128.1	128.6	128.4	130.1	130.6	130.8	131.4	131.7	132.4
Shortening and cooking oil	143.4	140.4	132.4	129.3	136.1	134.8	132.2	133.2	133.3	131.8
Soft drinks	134.8	137.9	144.1	148.6	148.3	149.3	148.6	148.1	149.3	151.5
Finished consumer goods less foods	126.4	130.5	138.4	143.3	142.4	138.9	137.3	135.1	135.5	135.4
Alcoholic beverages	135.2	136.7	140.6	143.9	145.2	146.2	146.2	146.5	146.1	146.5
Apparel	126.6	127.1	127.4	127.4	126.7	126.5	126.3	126.0	125.8	125.8
Footwear	144.7	144.5	144.9	145.9	145.7	145.7	145.7	145.7	146.0	146.0
Tobacco products	283.4	374.0	397.2	426.9	447.4	447.5	455.5	455.5	447.9	448.1
Intermediate materials ³	123.0	123.2	129.2	131.3	130.1	127.7	126.7	125.4	125.6	125.5
Materials for food manufacturing	123.1	120.8	119.2	120.7	127.2	126.4	123.9	122.5	122.6	123.3
Flour	109.2	104.3	103.8	107.6	110.0	112.7	111.3	109.7	113.5	113.5
Refined sugar ⁴	119.8	121.0	110.6	109.9	110.5	111.1	110.4	113.6	115.9	115.9
Crude vegetable oils	131.1	90.2	73.6	59.1	76.2	71.2	73.8	73.8	75.2	70.1
Crude materials ⁵	96.7	98.2	120.6	141.2	107.6	97.6	104.8	94.8	98.1	97.6
Foodstuffs and feedstuffs	103.8	98.7	100.2	104.3	108.7	104.1	98.3	96.4	99.5	102.3
Fruits and vegetables and nuts ⁶	117.2	117.4	111.1	118.8	114.1	111.5	109.3	122.1	127.7	133.5
Grains	93.4	80.1	78.3	80.1	81.7	78.5	80.2	82.6	82.2	81.0
Slaughter livestock	82.3	86.4	96.5	102.3	97.6	93.5	84.3	84.0	89.7	96.4
Slaughter poultry, live	141.4	129.9	124.7	123.6	139.5	137.2	134.5	121.4	124.7	119.9
Plant and animal fibers	110.4	86.5	93.9	92.1	56.6	48.3	54.2	54.8	54.9	56.6
Fluid milk	112.6	106.3	92.0	97.5	126.8	117.5	106.6	101.6	99.5	100.1
Oilseeds	114.4	90.8	93.8	86.5	91.4	86.7	86.4	85.2	86.3	85.7
Leaf tobacco	104.6	101.6	--	121.4	110.8	112.0	116.4	115.2	113.8	111.1
Raw cane sugar	117.2	113.7	101.8	111.9	110.5	110.6	111.0	112.8	111.7	109.4

-- = Not available. 1. Commodities ready for sale to ultimate consumer. 2. Includes all raw, intermediate, and processed foods (excludes soft drinks, alcoholic beverages, and manufactured animal feeds). 3. Commodities requiring further processing to become finished goods. 4. All types and sizes of refined sugar. 5. Products entering market for the first time that have not been manufactured at that point. 6. Fresh and dried. This table is compiled with data provided by the Bureau of Labor Statistics (BLS). BLS operates a website at <http://www.bls.gov> and a Producer Prices Information Hotline at (202) 691-7705.

Farm-Retail Price Spreads

Table 8—Farm-Retail Price Spreads

	Annual			2000			2001			
	1999	2000	2001	Dec	Jul	Aug	Sep	Oct	Nov	Dec
Market basket¹										
Retail cost (1982-84=100)	167.3	170.6	177.2	174.0	177.7	177.9	178.3	179.3	178.9	178.9
Farm value (1982-84=100)	98.3	96.9	106.2	101.2	107.9	110.3	110.6	109.6	108.2	105.6
Farm-retail spread (1982-84=100)	204.5	210.3	215.4	213.2	215.3	214.3	214.8	216.8	217.0	218.5
Farm value-retail cost (%)	20.6	19.9	21.0	20.4	21.3	21.7	21.7	21.4	21.2	20.7
Meat products										
Retail cost (1982-84=100)	142.3	150.4	159.3	152.9	160.8	160.7	161.5	161.8	161.2	160.0
Farm value (1982-84=100)	81.6	88.4	97.4	90.7	99.4	99.5	100.2	100.6	100.5	100.9
Farm-retail spread (1982-84=100)	204.7	214.0	222.8	216.7	223.8	223.5	224.4	224.6	223.5	220.6
Farm value-retail cost (%)	29.0	29.8	31.0	30.1	31.3	31.4	31.4	31.5	31.6	31.9
Dairy products										
Retail cost (1982-84=100)	159.6	160.7	167.1	161.5	168.3	168.9	169.4	170.8	171.2	170.8
Farm value (1982-84=100)	107.9	98.8	118.5	106.1	126.4	129.1	133.8	123.2	116.8	105.9
Farm-retail spread (1982-84=100)	207.2	217.7	211.8	212.6	206.9	205.6	202.3	214.7	221.4	230.7
Farm value-retail cost (%)	32.4	29.5	34.0	31.5	36.0	36.7	37.9	34.6	32.7	29.7
Poultry										
Retail cost (1982-84=100)	157.9	159.8	164.9	160.7	166.6	167.5	165.4	169.6	166.4	167.7
Farm value (1982-84=100)	119.0	117.4	126.2	114.5	132.5	132.6	136.1	132.4	127.1	118.9
Farm-retail spread (1982-84=100)	202.7	208.7	209.3	213.9	205.8	207.6	199.1	212.4	211.6	223.9
Farm value-retail cost (%)	40.3	39.3	41.0	38.1	42.6	42.4	44.0	41.8	40.9	38.0
Eggs										
Retail cost (1982-84=100)	128.1	131.9	136.4	145.5	129.6	133.0	131.4	132.3	138.4	133.5
Farm value (1982-84=100)	74.9	80.6	74.3	119.3	60.2	66.0	64.6	76.6	83.4	70.5
Farm-retail spread (1982-84=100)	223.7	223.9	248.0	192.6	254.4	253.4	251.4	232.3	237.3	246.8
Farm value-retail cost (%)	37.6	39.3	35.0	52.7	29.8	31.9	31.6	37.2	38.7	33.9
Cereal and bakery products										
Retail cost (1982-84=100)	185.0	188.3	193.8	190.7	194.9	195.9	195.1	195.2	194.9	195.3
Farm value (1982-84=100)	82.5	75.2	78.8	77.4	78.1	79.1	79.2	77.9	77.3	76.6
Farm-retail spread (1982-84=100)	199.2	204.0	209.9	206.5	211.2	212.2	211.3	211.6	211.3	211.9
Farm value-retail cost (%)	5.5	4.9	5.0	5.0	4.9	4.9	5.0	4.9	4.9	4.8
Fresh fruit										
Retail cost (1982-84=100)	294.3	284.3	291.7	297.4	289.2	283.7	293.0	296.3	296.4	298.7
Farm value (1982-84=100)	153.7	141.3	145.7	143.7	127.2	142.5	136.3	173.1	168.7	170.8
Farm-retail spread (1982-84=100)	359.3	350.3	359.1	368.4	364.0	348.9	365.3	353.2	355.4	357.7
Farm value-retail cost (%)	16.5	15.7	15.8	15.3	13.9	15.9	14.7	18.5	18.0	18.1
Fresh vegetables										
Retail cost (1982-84=100)	209.3	219.4	230.6	240.2	226.3	224.9	228.2	229.1	228.6	230.4
Farm value (1982-84=100)	118.1	121.4	129.9	129.2	133.1	144.0	124.9	108.9	111.7	119.1
Farm-retail spread (1982-84=100)	256.2	269.8	282.4	297.3	274.2	266.5	281.3	290.9	288.7	287.6
Farm value-retail cost (%)	19.2	18.8	19.1	18.3	20.0	21.7	18.6	16.1	16.6	17.6
Processed fruits and vegetables										
Retail cost (1982-84=100)	154.8	153.6	159.3	153.8	160.6	161.1	160.8	161.6	160.5	161.1
Farm value (1982-84=100)	113.5	106.4	107.9	105.6	107.0	107.7	110.0	110.6	111.4	112.2
Farm-retail spread (1982-84=100)	167.7	168.3	175.3	168.8	177.3	177.8	176.6	177.5	175.8	176.4
Farm value-retail cost (%)	17.4	16.5	16.1	16.3	15.8	15.9	16.3	16.3	16.5	16.6
Fats and oils										
Retail cost (1982-84=100)	148.3	147.4	155.7	150.2	157.8	158.5	158.5	159.5	155.6	156.9
Farm value (1982-84=100)	89.0	80.9	76.9	73.8	86.7	88.9	78.3	74.6	78.6	80.3
Farm-retail spread (1982-84=100)	170.0	171.9	184.7	178.3	184.0	184.1	188.0	190.7	183.9	185.1
Farm value-retail cost (%)	16.2	14.8	13.3	13.2	14.8	15.1	13.3	12.6	13.6	13.8

See footnotes at end of table, next page.

Table 8—Farm-Retail Price Spreads (continued)

	Annual			2001					2002	
	1999	2000	2001	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Beef, all fresh retail value (cents/lb.)	260.5	275.3	300.5	296.2	303.1	303.5	303.3	305.2	307.3	307.3
Beef, Choice										
Retail value (cents/lb.) ²	287.8	306.4	337.7	334.2	338.0	337.6	330.3	330.8	330.5	330.5
Wholesale value (cents/lb.) ³	171.6	182.3	192.1	201.5	180.4	174.3	177.3	175.2	188.2	188.2
Net farm value (cents/lb.) ⁴	141.1	149.0	154.5	171.0	142.3	136.3	137.8	145.4	155.1	155.1
Farm-retail spread (cents/lb.)	146.7	157.4	183.2	163.2	195.7	201.3	192.5	185.4	175.4	175.4
Wholesale-retail (cents/lb.) ⁵	116.2	124.1	145.6	132.7	157.6	163.3	153.0	155.6	142.3	142.3
Farm-wholesale (cents/lb.) ⁶	30.5	33.3	37.6	30.5	38.1	38.0	39.5	29.8	33.1	33.1
Farm value-retail value (%)	49.0	48.6	45.8	51.2	42.1	40.4	41.7	44.0	46.9	46.9
Pork										
Retail value (cents/lb.) ²	241.5	258.2	269.4	261.5	276.4	271.3	271.4	270.8	271.7	271.7
Wholesale value (cents/lb.) ³	99.0	114.5	117.8	107.7	113.5	105.7	105.5	108.4	108.3	108.3
Net farm value (cents/lb.) ⁴	60.4	79.4	81.2	73.7	73.1	62.9	62.4	71.5	72.4	72.4
Farm-retail spread (cents/lb.)	181.1	178.8	188.2	187.8	203.3	208.4	209.0	199.3	199.3	199.3
Wholesale-retail (cents/lb.) ⁵	142.5	143.7	151.6	153.8	162.9	165.6	165.9	162.4	163.4	163.4
Farm-wholesale (cents/lb.) ⁶	38.6	35.1	36.6	34.0	40.4	42.8	43.1	36.9	35.9	35.9
Farm value-retail value (%)	25.0	30.8	30.1	28.2	26.4	23.2	23.0	26.4	26.6	26.6

1. Retail costs are based on CPI-U of retail prices for domestically produced farm foods, published monthly by the Bureau of Labor Statistics (BLS).

Farm value is the payment for the quantity of farm equivalent to the retail unit, less allowance for by-product. Farm values are based on prices at first point of sale, and may include marketing charges such as grading and packing for some commodities. The farm-retail spread, the difference between the retail value and farm value, represents charges for assembling, processing, transporting, and distributing. 2. Weighted-average value of retail cuts from pork and Choice yield grade 3 beef. Prices from BLS. 3. Value of wholesale (boxed beef) and wholesale cuts (pork) equivalent to 1 pound of retail cuts adjusted for transportation costs and by-product values. 4. Market value to producer for live animal equivalent to 1 lb. of retail cuts, minus value of by-products. 5. Charges for retailing and other marketing services such as wholesaling and in-city transportation. 6. Charges for livestock marketing, processing, and transportation.

Information contacts: Veronica Jones (202) 694-5387, William F. Hahn (202) 694-5175

Table 9—Price Indexes of Food Marketing Costs

	Annual			2000				2001		
	1998	1999	2000	I	II	III	IV	I	II	III
1987=100*										
Labor—hourly earnings and benefits	490.4	503.3	514.0	508.2	512.0	514.1	521.7	527.5	531.8	534.4
Processing	499.3	511.4	525.0	518.1	523.4	526.9	531.3	536.4	542.7	546.8
Wholesaling	552.5	564.6	589.4	578.9	586.4	587.3	601.0	606.4	611.3	618.4
Retailing	454.1	465.8	469.9	467.1	467.8	465.2	477.2	483.8	485.8	484.8
Packaging and containers	395.5	399.4	412.0	410.3	410.6	413.5	413.7	414.2	417.8	416.6
Paperboard boxes and containers	365.2	373.0	407.7	391.9	413.0	412.4	413.5	412.0	413.1	412.1
Metal cans	487.9	486.6	452.5	489.5	440.1	440.1	440.1	441.5	444.3	446.0
Paper bags and related products	432.9	440.9	470.4	457.3	472.4	477.6	474.5	474.2	481.3	474.6
Plastic films and bottles	322.8	324.2	336.7	329.4	330.6	342.4	344.3	344.0	345.8	344.4
Glass containers	446.8	447.1	450.8	450.1	451.1	451.1	450.8	460.2	471.7	473.7
Metal foil	232.0	227.3	232.4	229.8	231.3	233.8	234.8	235.5	246.1	242.7
Transportation services	428.3	394.0	394.3	392.3	393.3	394.6	396.9	401.0	403.1	406.6
Advertising	624.5	623.7	635.7	633.6	635.0	635.7	638.6	644.3	645.6	646.0
Fuel and power	619.7	651.5	841.1	816.5	822.2	866.1	859.6	830.3	826.6	826.4
Electric	492.1	489.4	498.2	477.2	487.0	523.8	504.9	514.3	526.1	559.9
Petroleum	457.0	565.9	1,135.8	1,114.0	1,102.2	1,160.6	1,166.4	998.5	974.7	937.2
Natural gas	1,239.4	1,235.6	1,275.4	1,235.3	1,259.8	1,300.7	1,305.7	1,403.3	1,391.5	1,363.3
Communications, water and sewage	307.6	309.3	309.1	310.3	307.8	308.7	309.5	312.6	312.5	314.2
Rent	260.5	256.9	258.2	256.8	258.0	259.1	259.0	259.2	257.7	257.7
Maintenance and repair	529.3	541.6	561.2	552.2	558.3	564.7	569.7	574.8	578.8	585.2
Business services	522.9	531.9	544.6	540.3	543.2	545.9	548.8	555.3	558.0	559.7
Supplies	332.3	327.7	348.5	365.6	338.2	344.5	345.8	349.2	347.0	342.8
Property taxes and insurance	598.3	619.7	654.6	639.8	647.4	658.6	672.6	680.9	687.5	695.1
Interest, short-term	103.7	103.7	115.4	111.3	116.6	117.7	116.0	91.0	64.1	55.0
Total marketing cost index	467.2	472.2	491.5	486.7	488.8	493.1	497.1	499.5	502.1	503.6

Last two quarters preliminary. * Indexes measure changes in employee earnings and benefits and in prices of supplies used in processing, wholesaling, and retailing U.S. farm foods purchased for at-home consumption. Information contact: Veronica Jones (202) 694-5387

Livestock & Products

Table 10—U.S. Meat Supply & Use

	Beg. stocks	Produc- tion ¹	Imports	Total supply	Exports	Ending stocks	Consumption		Conversion factor ³	Primary market price ⁴
							Total	Per capita ²		
Beef										
1998	465	25,760	2,643	28,868	2,171	393	26,305	68	0.700	61.48
1999	393	26,493	2,873	29,759	2,410	411	26,938	68	0.700	65.56
2000	411	26,888	3,031	30,330	2,468	525	27,337	68	0.700	69.65
2001	525	26,192	3,162	29,879	2,271	605	27,003	66	0.700	72.43
2002	605	25,730	3,245	29,580	2,190	425	26,965	65	0.700	74.63
Pork										
1998	408	19,011	705	20,124	1,230	584	18,309	52	0.776	34.72
1999	584	19,308	827	20,720	1,278	489	18,953	53	0.776	34.00
2000	489	18,952	967	20,408	1,287	477	18,644	51	0.776	44.70
2001	477	19,160	950	20,587	1,563	525	18,499	50	0.776	45.81
2002	525	19,212	960	20,697	1,485	525	18,687	50	0.776	43.63
Veal ⁶										
1998	8	262	0	270	0	5	265	1	0.83	82.29
1999	5	235	0	240	0	5	235	1	0.83	89.62
2000	5	225	0	230	0	5	225	1	0.83	105.75
2001	5	205	0	210	0	6	204	1	0.83	106.70
2002	6	200	0	206	0	5	201	1	0.83	102.74
Lamb and mutton										
1998	14	251	112	377	6	12	360	1	0.89	74.20
1999	12	248	112	372	5	9	358	1	0.89	75.97
2000	9	234	130	373	6	13	354	1	0.89	79.40
2001	13	227	144	384	7	12	365	1	0.89	72.04
2002	12	199	155	366	5	13	348	1	0.89	73.13
Total red meat										
1998	894	45,284	3,461	49,639	3,407	994	45,239	120	--	--
1999	994	46,284	3,812	51,091	3,693	914	46,484	122	--	--
2000	914	46,299	4,128	51,341	3,761	1,020	46,560	121	--	--
2001	1,020	45,784	4,256	51,060	3,841	1,148	46,071	118	--	--
2002	1,148	45,341	4,360	50,849	3,680	968	46,201	117	--	--
Broilers										
1998	607	27,612	5	28,225	4,673	711	22,841	71	0.859	63
1999	711	29,468	4	30,183	4,919	796	24,469	75	0.859	58
2000	796	30,209	6	31,011	5,392	798	24,821	76	0.859	56
2001	798	30,840	14	31,652	6,186	712	24,754	74	0.859	59
2002	712	31,707	8	32,427	6,350	700	25,377	75	0.859	59
Mature chickens										
1998	7	525	0	533	426	6	101	1	1.0	--
1999	6	554	0	562	393	8	162	1	1.0	--
2000	8	531	0	540	220	9	311	1	1.0	--
2001	9	514	0	527	182	8	336	1	1.0	--
2002	8	500	0	509	180	8	321	1	1.0	--
Turkeys										
1998	415	5,215	0	5,630	446	304	4,880	18	1.0	62
1999	304	5,230	1	5,535	378	254	4,902	18	1.0	69
2000	254	5,333	1	5,589	445	241	4,902	17	1.0	71
2001	241	5,483	1	5,726	487	241	4,996	18	1.0	66
2002	241	5,527	1	5,769	495	275	4,998	17	1.0	66
Total poultry										
1998	1,029	33,352	6	34,388	5,545	1,022	27,821	89	--	--
1999	1,022	35,252	7	36,281	5,690	1,058	29,533	93	--	--
2000	1,058	36,073	9	37,140	6,058	1,048	30,034	94	--	--
2001	1,048	36,838	19	37,904	6,856	961	30,086	93	--	--
2002	961	37,733	11	38,705	7,025	983	30,696	94	--	--
Red meat and poultry										
1998	1,923	78,637	3,467	84,027	8,951	2,016	73,060	209	--	--
1999	2,016	81,537	3,819	87,371	9,383	1,972	76,017	215	--	--
2000	1,972	82,372	4,137	88,480	9,818	2,068	76,594	215	--	--
2001	2,068	82,622	4,275	88,964	10,697	2,109	76,157	211	--	--
2002	2,109	83,074	4,371	89,554	10,705	1,951	76,897	211	--	--

-- = Not available. Values for the last 2 years are forecasts. 1. Total including farm production for red meat and federally inspected plus nonfederally inspected for poultry. 2. Retail-weight basis. 3. Red meat, carcass to retail conversion; poultry, ready-to-cook production to retail weight. 4. Beef: Medium #1, Nebraska Direct 1,100-1,300 lb.; pork: barrows and gilts, Iowa, Southern Minnesota; veal: farm price of calves; lamb and mutton: choice slaughter lambs, San Angelo; broilers: wholesale 12-city average; turkeys: wholesale NY 8-16 lb. young hens. 5. Carcass weight for red meats and certified ready-to-cook for poultry. 6. Beginning in 1989, veal trade is no longer reported separately. *Information contact: LaVerne Williams (202) 694-5190*

Table 11—U.S. Egg Supply & Use

	Beg. stocks	Production	Imports	Total supply	Exports	Hatching use	Ending stocks	Consumption		Primary market price*
								Total	Per capita	
	Million doz.								No.	¢/doz.
1995	14.9	6,215.6	4.1	6,234.6	208.9	847.2	11.2	5,167.3	233.5	72.9
1996	11.2	6,350.7	5.4	6,367.3	253.1	863.8	8.5	5,241.8	234.6	88.2
1997	8.5	6,473.1	6.9	6,488.5	227.8	894.7	7.4	5,358.6	235.8	81.2
1998	7.4	6,657.9	5.8	6,671.2	218.8	921.8	8.4	5,522.2	240.1	75.8
1999	8.4	6,912.0	7.4	6,927.8	161.9	941.7	7.6	5,816.6	250.0	65.6
2000	7.6	7,033.5	8.4	7,049.5	171.1	940.2	11.4	5,926.8	251.8	68.9
2001	11.4	7,144.0	8.9	7,164.2	190.4	952.2	10.4	6,011.3	252.3	67.2
2002	10.4	7,240.0	8.0	7,258.4	165.0	985.0	12.0	6,096.4	253.2	64.6

Values for the last year are forecasts. Values for previous year are preliminary. * Cartoned grade A large eggs, New York.

Information contact: LaVerne Williams (202) 694-5190

Table 12—U.S. Milk Supply & Use

Production	Farm use	Commercial		Imports	Total commercial supply	Commercial				CCC net removals		
		Farm marketings	Beg. stocks			CCC net removals	Ending stocks	Disappearance	All milk price ¹	Skim solids basis	Total solids basis ²	
		Million lbs. (milkfat basis)							Billion lbs.			
1994	153.6	1.7	151.9	4.5	2.9	159.3	4.8	4.3	150.3	12.97	3.7	4.2
1995	155.3	1.6	153.7	4.3	2.9	160.9	2.1	4.1	154.9	12.74	4.4	3.5
1996	154.0	1.5	153.5	4.1	2.9	159.5	0.1	4.7	154.7	14.74	0.7	0.5
1997	156.1	1.4	154.7	4.7	2.7	162.1	1.1	4.9	156.1	13.34	3.7	2.7
1998	157.4	1.4	156.1	4.9	4.6	165.5	0.4	5.3	159.9	15.42	4.0	2.6
1999	162.7	1.4	161.3	5.3	4.7	171.4	0.3	6.1	164.9	14.36	6.5	4.0
2000	167.6	1.3	166.2	6.1	4.4	176.8	0.8	6.9	169.1	12.40	8.6	5.5
2001	165.3	1.3	164.1	6.8	5.7	176.6	0.2	7.0	169.4	14.93	5.8	3.5
2002	169.4	1.2	168.2	7.0	4.8	180.0	0.2	6.6	173.2	13.15	5.0	3.1

Values for latest year are forecasts. Values for the preceding year are preliminary. 1. Delivered to plants and dealers; does not reflect deductions.

2. Arbitrarily weighted average of milkfat basis (40 percent) and solids basis (60 percent). Information contact: Jim Miller (202) 694-5184

Table 13—Poultry & Eggs

	Annual			2001							2002
	1999	2000	2001	Jan	Aug	Sep	Oct	Nov	Dec	Jan	
Broilers											
Federally inspected slaughter certified (mil. lb.)	29,741.4	30,495.2	31,168.2	2,622.2	2,827.7	2,427.9	2,897.2	2,501.2	2,463.6	2,767.6	
Wholesale price, 12-city (cents/lb.)	58.1	56.2	59.1	56.9	60.9	61.9	60.2	58.9	56.0	56.9	
Price of grower feed (\$/ton) ¹	103.1	104.7	101.2	106.3	107.7	102.4	95.3	96.3	100.0	100.0	
Broiler-feed price ratio ²	7.2	6.6	7.8	6.4	7.8	8.4	8.6	8.1	7.4	7.4	
Stocks beginning of period (mil. lb.)	711.1	795.6	797.6	797.6	633.8	615.5	616.7	628.7	678.8	711.8	
Broiler-type chicks hatched (mil.)	8,715.4	8,792.1	8,901.6	733.9	761.2	730.0	739.7	695.7	769.4	775.7	
Turkeys											
Federally inspected slaughter certified (mil. lb.)	5,296.5	5,402.2	5,555.9	461.2	493.1	423.4	541.3	493.0	419.2	482.0	
Wholesale price, Eastern U.S. 8-16 lb. young hens (cents/lb.)	69.0	70.5	66.3	61.5	66.4	68.8	72.9	73.5	67.7	60.9	
Price of turkey grower feed (\$/ton) ¹	95.0	95.9	95.6	100.3	99.5	97.3	91.7	92.3	95.1	94.7	
Turkey-feed price ratio ²	8.6	8.7	8.2	7.3	7.8	8.3	9.6	9.6	8.1	7.2	
Stocks beginning of period (mil. lb.)	304.3	254.3	241.3	241.3	534.2	545.3	542.0	497.9	260.0	240.5	
Poults placed in U.S. (mil.)	296.1	297.3	301.9	25.6	25.0	22.4	24.4	24.2	24.6	26.1	
Eggs											
Farm production (mil.)	82,944.0	84,393.0	85,733.0	7,103.0	7,204.0	7,062.0	7,340.0	7,191.0	7,403.0	7,248.0	
Average number of layers (mil.)	322.9	328.3	335.4	333.8	332.8	335.0	337.1	337.9	338.5	338.3	
Rate of lay (eggs per layer on farms)	256.8	257.1	255.6	21.3	21.6	21.1	21.8	21.3	21.9	21.4	
Cartoned price, New York, grade A large (cents/doz.) ³	65.6	68.9	67.1	76.2	62.8	61.5	66.1	71.3	67.1	69.7	
Price of laying feed (\$/ton) ¹	124.5	123.9	125.8	123.3	137.1	133.4	117.0	114.4	126.9	122.2	
Egg-feed price ratio ²	9.8	10.6	9.9	10.9	8.4	8.5	10.7	11.5	9.3	10.2	
Stocks, first of month											
Frozen (mil. doz.)	8.4	7.6	11.4	11.4	12.6	13.5	13.4	11.8	10.5	10.4	
Replacement chicks hatched (mil.)	451.7	429.7	450.5	38.0	35.2	36.6	36.5	31.6	31.5	35.5	

1. Calculated from price ratios that were revised February 1995. 2. Pounds of feed equal in value to 1 dozen eggs or 1 lb. of broiler or turkey liveweight (revised February 1995). 3. Price of cartoned eggs to volume buyers for delivery to retailers.

Information contact: LaVerne Williams (202) 694-5190

Table 14—Dairy

	Annual			2001							2002
	1999	2000	2001	Jan	Aug	Sep	Oct	Nov	Dec	Jan	
Class III (BFP before 2000) 3.5% fat (\$/cwt.)	12.43	9.74	13.10	9.99	15.55	15.90	14.60	11.31	11.80	11.87	
Wholesale prices											
Butter, Central States (cents/lb.) ¹	125.2	118.5	167.7	122.2	204.5	219.7	151.9	135.2	130.2	136.2	
Am. cheese, Wis. assembly pt. (cents/lb.)	142.3	116.2	144.9	110.2	171.8	173.9	139.7	126.4	129.1	131.9	
Nonfat dry milk (cents/lb.) ²	103.5	101.6	100.8	103.6	99.0	99.3	98.8	96.1	95.8	94.0	
USDA net removals											
Total (mil. lb.) ³	343.5	841.4	151.1	30.6	11.1	3.7	-12.3	19.6	17.3	22.1	
Butter (mil. lb.)	3.7	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Am. cheese (mil. lb.)	4.6	28.0	4.6	1.6	0.8	0.2	-1.7	0.8	0.8	0.8	
Nonfat dry milk (mil. lb.)	540.6	692.6	493.8	70.6	14.9	7.5	16.4	53.6	43.3	64.8	
Milk											
Milk prod. 20 states (mil. lb.)	140,062	144,535	142,817	12,059	11,754	11,376	11,756	11,492	12,008	12,272	
Milk per cow (lb.)	18,109	18,533	18,438	1,549	1,520	1,472	1,522	1,485	1,549	1,585	
Number of milk cows (1,000)	7,734	7,799	7,746	7,784	7,735	7,730	7,726	7,739	7,750	7,745	
U.S. milk production (mil. lb.) ⁴	162,716	167,559	165,336	14,003	13,564	13,124	13,616	13,305	13,897	14,190	
Stocks, beginning ³											
Total (mil. lb.)	5,302	6,186	7,010	7,010	10,288	9,280	9,002	8,386	7,079	7,265	
Commercial (mil. lb.)	5,274	6,142	6,871	6,871	10,018	9,001	8,755	8,167	6,873	7,047	
Government (mil. lb.)	28	44	139	139	270	279	247	219	206	218	
Imports, total (mil. lb.) ³	4,772	4,445	5,716	433	598	319	524	512	396	--	
Commercial disappearance (mil. lb.) ³	164,947	169,123	169,419	13,357	15,060	13,580	14,632	14,986	13,994	--	
Butter											
Production (mil. lb.)	1,277.1	1,273.6	1,224.6	129.4	76.8	88.7	111.0	101.3	123.4	142.8	
Stocks, beginning (mil. lb.)	25.9	24.9	24.0	24.0	150.3	117.0	110.5	100.4	57.6	55.5	
Commercial disappearance (mil. lb.)	1,310.7	1,297.6	1,268.7	87.3	122.5	97.7	125.0	147.2	127.5	--	
American cheese											
Production (mil. lb.)	3,532.6	3,633.9	3,551.8	301.1	285.9	282.5	296.4	286.7	314.4	314.6	
Stocks, beginning (mil. lb.)	407.6	458.0	521.1	521.1	526.3	497.5	486.3	462.5	437.9	448.3	
Commercial disappearance (mil. lb.)	3,542.2	3,588.1	3,688.6	324.5	320.1	296.9	333.9	316.7	306.6	--	
Other cheese											
Production (mil. lb.)	4,361.5	4,620.6	4,607.8	385.5	377.5	362.0	386.6	399.6	389.9	380.6	
Stocks, beginning (mil. lb.)	109.5	163.3	185.2	185.2	224.6	222.1	221.2	208.9	193.2	210.9	
Commercial disappearance (mil. lb.)	4,672.1	4,963.3	4,950.2	385.4	410.7	389.4	435.6	459.1	411.5	--	
Nonfat dry milk											
Production (mil. lb.)	1,359.7	1,451.6	1,434.6	116.7	95.7	94.8	102.8	121.3	130.2	118.1	
Stocks, beginning (mil. lb.)	56.9	150.9	146.3	146.3	147.0	108.9	102.9	100.4	112.7	135.8	
Commercial disappearance (mil. lb.)	737.2	770.4	972.4	46.9	119.2	93.3	89.0	55.6	82.1	--	
Frozen dessert											
Production (mil. gal.) ⁵	1,301.0	1,312.2	1,311.9	90.7	124.8	106.2	100.7	88.9	84.1	95.6	
	Annual			2000				2001			
	1999	2000	2001	II	III	IV	I	II	III	IV	
Milk production (mil. lb.)	162,716	167,559	165,336	43,185	41,108	40,644	41,267	42,681	40,570	40,818	
Milk per cow (lb.)	17,772	18,201	18,139	4,688	4,458	4,416	4,514	4,683	4,459	4,483	
No. of milk cows (1,000)	9,156	9,206	9,115	9,212	9,221	9,203	9,143	9,114	9,098	9,105	
Milk-feed price ratio	2.03	1.75	--	1.67	1.84	1.81	--	--	--	--	
Returns over concentrate costs (\$/cwt milk)	11.40	9.40	--	9.05	9.85	9.80	--	--	--	--	

-- = Not available. Quarterly values for latest year are preliminary. 1. Grade AA Chicago before June 1998. 2. Prices paid f.o.b. Central States production area. 3. Milk equivalent, fat basis. 4. Monthly data ERS estimates. 5. Hard ice cream, ice milk, and hard sherbet. *Information contact: LaVerne Williams (202) 694-5190*

Table 15—Wool

	Annual			2000				2001			
	1998	1999	2000	II	III	IV	I	II	III	IV	
U.S. wool price (¢/lb.) ¹	162	110	107	120	117	96	101	130	125	126	
Imported wool price (¢/lb.) ²	164	136	137	139	139	136	151	155	167	168	
U.S. mill consumption, scoured											
Apparel wool (1,000 lb.)	98,373	65,468	60,294	16,064	14,620	13,914	16,590	13,009	11,197	10,434	
Carpet wool (1,000 lb.)	16,331	15,017	14,514	3,668	3,766	3,886	4,278	3,791	2,904	2,037	

-- = Not available. 1. Wool price delivered at U.S. mills, clean basis, Graded Territory 64's (20.60-22.04 microns) staple 2-3/4" and up. 2. Wool price, Charleston, SC warehouse, clean basis, Australian 60/62's, type 64A (24 micron). Duty since 1982 has been 10 cents.

Information contact: Mae Dean Johnson (202) 694-5299

Table 16—Meat Animals

	Annual			2001					2002	
	1999	2000	2001	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Cattle on feed (7 states, 1000+ head capacity)										
Number on feed (1,000 head) ¹	9,021	9,752	10,076	10,222	9,383	9,613	10,231	10,203	9,910	9,951
Placed on feed (1,000 head)	21,446	21,875	21,145	1,331	1,811	2,315	1,581	1,330	1,907	1,538
Marketings (1,000 head)	20,124	20,674	19,955	1,477	1,541	1,640	1,541	1,545	1,792	1,532
Other disappearance (1,000 head)	676	702	774	64	40	57	68	78	74	52
Market prices (\$/cwt)										
Slaughter cattle										
Choice steers, 1,100-1,300 lb.										
Texas	65.89	69.86	71.98	79.40	68.75	66.30	63.60	63.62	64.00	70.81
Neb. direct	65.56	69.65	72.43	79.71	69.16	66.58	64.71	64.00	67.55	71.15
Boning utility cows, Sioux Falls	38.40	41.71	44.49	43.34	44.13	43.25	37.75	38.38	43.75	41.88
Feeder steers										
Medium no. 1, Oklahoma City										
600-650 lb.	82.64	94.31	95.29	97.67	97.14	87.99	86.40	89.30	87.46	90.12
750-800 lb.	76.39	86.14	88.20	86.05	91.64	88.03	83.63	84.44	81.65	82.04
Slaughter hogs										
Barrows and gilts, 51-52 percent lean										
National Base converted to live equal.	34.00	44.70	45.81	41.47	46.93	41.27	35.49	35.14	40.16	40.65
Sows, Iowa, S.MN 1-2 300-400 lb.	19.26	29.79	33.98	29.48	33.12	31.60	25.01	25.28	27.79	29.45
Slaughter sheep and lambs										
Lambs, Choice, San Angelo	75.96	79.40	72.04	87.00	56.50	57.67	59.00	71.60	65.85	70.00
Ewes, Good, San Angelo	42.45	46.23	45.66	56.75	26.92	38.50	39.83	43.60	41.10	39.19
Feeder lambs										
Choice, San Angelo	80.74	95.86	89.38	117.00	69.13	68.50	70.67	76.90	76.25	84.25
Wholesale meat prices, Midwest										
Boxed beef cut-out value										
Choice, 700-800 lb.	110.90	117.45	122.17	129.53	117.65	113.58	108.70	110.74	110.14	109.59
Select, 700-800 lb.	101.91	108.83	114.42	125.01	108.21	104.64	101.46	105.53	107.91	107.18
Canner and cutter cow beef	66.51	72.57	--	--	--	--	--	--	--	--
Pork cutout	53.45	64.07	66.83	61.47	69.61	60.68	56.74	56.68	58.39	58.59
Pork loins, bone-in, 1/4" trim, 14-19 lb.	100.38	117.13	116.97	114.32	116.21	108.69	97.57	98.50	106.95	105.73
Pork bellies, 12-14 lb.	57.12	77.46	78.61	66.68	81.91	61.30	63.58	69.13	70.87	70.75
Hams, bone-in, trimmed, 20-23 lb.	45.18	52.02	56.86	54.38	65.30	57.38	50.69	45.96	48.05	52.56
All fresh beef retail price	260.50	275.30	275.30	296.20	301.20	303.10	303.50	303.30	305.20	307.30
Commercial slaughter (1,000 head) ²										
Cattle	36,150	36,247	36,247	2,580	2,807	3,161	2,903	2,779	3,056	2,615
Steers	17,932	18,060	18,060	1,210	1,379	1,522	1,375	1,377	1,450	1,256
Heifers	11,868	12,041	12,041	870	948	1,036	952	883	1,021	894
Cows	5,710	5,522	5,522	454	429	544	527	473	533	419
Bull and stags	639	624	624	46	51	59	50	46	52	46
Calves	1,282	1,132	1,132	79	79	94	87	84	87	73
Sheep and lambs	3,701	3,455	3,455	245	243	289	287	279	255	256
Hogs	101,544	97,955	97,955	7,604	7,811	9,330	8,717	8,419	8,658	7,500
Barrows and gilts	97,732	94,585	94,585	7,352	7,544	9,019	8,437	8,155	8,369	7,252
Commercial production (mil. lb.)										
Beef	26,386	26,776	26,776	1,881	2,120	2,388	2,201	2,110	2,330	1,987
Veal	226	216	216	16	15	18	16	16	17	14
Lamb and mutton	244	230	230	17	16	20	20	19	18	18
Pork	19,278	18,905	18,905	1,467	1,513	1,838	1,733	1,668	1,716	1,482
	Annual			2000		2001				2002
	1999	2000	2001	III	IV	I	II	III	IV	I
Hogs and pigs (U.S.) ³										
Inventory (1,000 head) ¹	62,206	59,342	59,138	59,117	59,495	59,138	57,524	58,223	58,642	58,774
Breeding (1,000 head) ¹	6,682	6,234	6,270	6,234	6,246	6,270	6,232	6,186	6,158	6,209
Market (1,000 head) ¹	55,523	53,109	52,868	52,884	53,250	52,868	51,292	52,037	52,484	52,564
Farrowings (1,000 head)	11,641	11,462	11,303	2,889	2,838	2,748	2,870	2,838	2,846	2,842
Pig crop (1,000 head)	102,354	101,354	99,473	25,548	25,112	23,963	25,509	25,029	24,972	--
Cattle on Feed, 7 states (1,000 head) ^{1, 4}										
Steers and steer calves	5,432	5,768	5,936	5,326	5,584	5,936	5,885	5,521	5,690	6,077
Heifers and heifer calves	3,552	3,942	4,081	3,602	3,877	4,081	3,913	3,894	3,882	3,769
Cows and bulls	37	42	59	31	41	59	61	51	41	64

-- = Not available. 1. Beginning of period. 2. Classes estimated. 3. Quarters are Dec. of preceding year to Feb. (I), Mar.-May (II), June-Aug. (III), and Sept.-Nov. (IV). 4. The 7 states include AZ, CA, CO, IA, KS, NE, and TX. Information contact: Leland Southard (202) 694-5187

Crops & Products

Table 17—Supply & Utilization^{1,2}

	Area		Yield	Production	Total supply ⁴	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price ⁵
	Planted	Harvested									
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
Wheat											
1997/98	70.4	62.8	39.5	2,481	3,020	251	1,007	1,040	2,298	722	3.38
1998/99	65.8	59.0	43.2	2,547	3,373	391	990	1,046	2,427	946	2.65
1999/00	62.7	53.8	42.7	2,299	3,339	288	1,013	1,089	2,390	950	2.48
2000/01*	62.6	53.1	42.0	2,232	3,272	299	1,036	1,061	2,396	876	2.62
2001/02*	59.6	48.7	40.2	1,958	2,929	225	1,028	975	2,228	701	2.75-2.85
Rice ⁶											
	<i>Mil. acres</i>	<i>Lb./acre</i>					<i>Mil. cwt (rough equiv)</i>				<i>\$/cwt</i>
1997/98	3.1	3.1	5,897.0	183.0	219.5	--	6/ 103.9	87.7	191.6	27.9	9.70
1998/99	3.3	3.3	5,663.0	184.4	223.0	--	6/ 114.0	86.8	200.9	22.1	8.89
1999/00	3.5	3.5	5,866.0	206.0	238.2	--	6/ 121.9	88.8	210.7	27.5	5.93
2000/01*	3.1	3.0	6,281.0	190.9	229.2	--	6/ 114.3	86.4	200.7	28.5	5.61
2001/02*	3.3	3.3	6,429.0	213.0	255.0	--	6/ 123.1	88.0	211.1	43.9	4.00-4.20
Corn											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1997/98	79.5	72.7	126.7	9,207	10,099	5,482	1,805	1,504	8,791	1,308	2.43
1998/99	80.2	72.6	134.4	9,759	11,085	5,468	1,846	1,984	9,298	1,787	1.94
1999/00	5.2	4.7	59.2	280	450	138	172	28	338	111	2.13
2000/01*	79.6	72.4	136.9	9,915	11,639	5,838	1,967	1,935	9,740	1,899	1.85
2001/02*	75.8	68.8	138.2	9,507	11,416	5,850	2,045	1,925	9,820	1,596	1.85-2.05
Sorghum											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1997/98	10.1	9.2	69.2	634	681	365	55	212	632	49	2.21
1998/99	9.6	7.7	67.3	520	569	262	45	197	504	65	1.66
1999/00	96.5	86.2	3.0	263	317	157	55	56	268	49	0.00
2000/01*	9.2	7.7	60.9	471	536	223	35	236	494	42	1.89
2001/02*	10.3	8.6	59.9	515	556	200	45	260	505	51	1.80-2.00
Barley											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1997/98	6.7	6.2	58.1	360	510	144	172	74	390	119	2.38
1998/99	6.3	5.9	60.0	352	501	161	170	29	360	142	1.98
1999/00	5.2	4.7	59.2	280	450	138	172	28	338	111	2.13
2000/01*	5.9	5.2	61.1	319	459	123	172	58	353	106	2.11
2001/02*	5.0	4.3	58.2	250	381	95	172	30	297	84	2.20-2.30
Oats											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1997/98	5.1	2.8	59.5	167	332	185	72	2	258	74	1.60
1998/99	4.9	2.8	60.2	166	348	196	69	2	266	81	1.10
1999/00	4.7	2.5	59.6	146	326	180	68	2	250	76	1.12
2000/01*	4.5	2.3	64.2	150	332	189	68	2	259	73	1.10
2001/02*	4.4	1.9	61.3	117	290	155	70	3	228	62	1.50-1.60
Soybeans ⁷											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1997/98	70.0	69.1	38.9	2,689	2,826	156	1,597	873	2,626	200	6.47
1998/99	72.0	70.4	38.9	2,741	2,944	201	1,590	805	2,595	348	4.93
1999/00	73.7	72.4	36.6	2,654	3,006	164	1,578	975	2,716	290	4.63
2000/01*	74.3	72.4	38.1	2,758	3,052	163	1,641	1,000	2,804	248	4.54
2001/02*	74.1	73.0	39.6	2,891	3,143	173	1,685	1,020	2,878	265	4.05-4.45
Soybean oil											
							<i>Mil. lbs.</i>				<i>¢/lb.</i>
1997/98	--	--	--	18,143	19,723	--	15,262	3,079	18,341	1,382	25.84
1998/99	--	--	--	18,081	19,546	--	15,655	2,372	18,027	1,520	19.90
1999/00	--	--	--	17,825	19,426	--	16,056	1,375	17,431	1,995	15.60
2000/01*	--	--	--	18,434	20,502	--	16,219	1,406	17,625	2,877	14.15
2001/02*	--	--	--	18,755	21,710	--	16,875	2,300	19,175	2,535	14.25-15.75
Soybean meal											
							<i>1,000 tons</i>				<i>\$/ton⁸</i>
1997/98	--	--	--	38,176	38,443	--	28,895	9,329	38,225	218	185.5
1998/99	--	--	--	37,792	38,109	--	30,657	7,122	37,779	330	138.5
1999/00	--	--	--	37,591	37,970	--	30,345	7,332	37,678	293	167.7
2000/01*	--	--	--	39,389	39,733	--	31,687	7,662	39,349	383	173.6
2001/02*	--	--	--	40,212	40,655	--	32,480	7,900	40,380	275	150-165

See footnotes at end of table, next page

Table 17—Supply & Utilization (continued)

	Area		Yield	Production	Total supply ³	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price ⁴
	Planted	Harvested									
	<i>Mil. acres</i>	<i>Lb./acre</i>					<i>Mil. bales</i>				<i>¢/lb.</i>
Cotton ⁸											
1997/98	13.9	13.4	673	18.8	22.8	--	11.3	7.5	18.8	3.9	65.2
1998/99	13.4	10.7	625	13.9	18.2	--	10.4	4.3	14.7	3.9	60.2
1999/00	14.9	13.4	607	17.0	21.0	--	10.2	6.8	17.0	3.9	45.0
2000/01*	15.5	13.1	632	17.2	21.1	--	8.9	6.8	15.6	6.0	49.8
2001/02*	15.8	13.8	698	20.1	26.1	--	7.3	10.3	17.6	8.5	31.7

-- = Not available or not applicable. *March 8, 2001 Supply and Demand Estimates. 1. Marketing year beginning June 1 for wheat, barley and oats; August 1 for cotton and rice; September 1 for soybeans, corn, and sorghum; October 1 for soybean meal and soybean oil.

2. Conversion factors: hectare (ha.) = 2.471 acres, 1 metric ton = 2,204.622 pounds, 36.7437 bushels of wheat or soybeans, 39.3679 bushels of corn or sorghum, 45.9296 bushels of barley, 68.8944 bushels of oats, 22.046 cwt of rice, and 4.59 480-pound bales of cotton. 3. Includes imports. 4. Marketing-year weighted average price received by farmers. Does not include an allowance for loans outstanding and government purchases. 5. Residual included in domestic use. 6. Includes seed. 7. Simple average of 48 percent protein, Decatur. 8. Upland and extra-long staple. Stocks estimates based on Census Bureau data, resulting in an unaccounted difference between supply and use estimates. For 2001/02, cotton price is the average for August 2001-January 2002. USDA is prohibited by law from publishing cotton price projections. *Information contact: Wilma Davis (202) 694-5304*

Table 18—Cash Prices, Selected U.S. Commodities

	Marketing year ¹			2001					2002	
	1998/99	1999/00	2000/01	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Wheat, no. 1 HRW, Kansas City (\$/bu.) ²	3.08	2.87	3.30	3.35	3.18	3.28	3.37	3.26	3.29	3.25
Wheat, DNS, Minneapolis (\$/bu.) ³	3.83	3.65	3.62	3.68	3.52	3.71	3.69	3.59	3.55	3.51
Rice, S.W. La. (\$/cwt) ⁴	16.79	12.99	12.46	12.75	10.97	10.58	10.41	10.29	9.97	9.88
Corn, no. 2 yellow, 30-day, Chicago (\$/bu.)	2.06	1.97	1.99	1.99	2.10	1.98	2.00	2.05	2.06	2.06
Sorghum, no. 2 yellow, Kansas City (\$/cwt)	3.29	3.10	3.41	3.63	3.55	3.38	3.44	3.59	3.61	3.55
Barley, feed, Duluth (\$/bu.)	--	--	1.47	1.51	1.48	1.50	1.50	1.54	1.55	1.55
Barley, malting, Minneapolis (\$/bu.)	--	--	2.37	2.40	2.34	2.42	2.44	2.48	2.48	2.48
U.S. cotton price, SLM, 1-1/16 in. (¢/lb.) ⁵	60.12	52.36	51.56	54.10	33.22	28.42	31.23	32.21	32.13	31.60
Northern Europe prices cotton index (¢/lb.) ⁶	58.97	52.85	57.25	60.88	41.13	37.35	38.13	42.85	43.39	42.59
U.S. M 1-3/32 in. (¢/lb.) ⁷	74.08	59.64	62.54	68.63	46.06	40.63	42.55	43.75	44.65	43.56
Soybeans, no. 1 yellow, 15-day ⁸ Central Illinois (\$/bu)	4.85	4.76	4.61	4.44	4.59	4.26	4.31	4.35	4.35	4.27
Soybean oil, crude, Decatur (¢/lb.)	19.90	20.50	--	12.38	15.46	14.38	15.23	12.38	14.80	14.15
Soybean meal, high protein, Decatur (\$/ton)	138.50	165.45	--	166.08	171.67	165.45	166.10	154.20	156.60	153.11

-- = Not available. 1. Beginning June 1 for wheat and barley; Aug. 1 for rice and cotton; Sept. 1 for corn, sorghum, and soybeans; Oct. 1 for soybean meal and oil. 2. Ordinary protein. 3. 14 percent protein. 4. Long grain, milled basis. 5. Average spot market. 6. Liverpool Cotlook "A" Index; average of 5 lowest priced growth. 7. Cotton, Memphis territory growth. 8. Soybean 30-day price discontinued. *Information contact: Wilma Davis (202) 694-5304*

Table 19—Farm Programs, Price Supports, Participation, & Payment Rates

	Marketing assistance loan rate	Marketing loan benefit ¹	Flexibility contract payment rate	Acres under contract	Contract payment yields
				<i>Mil. acres</i>	<i>Bu./acre</i>
Wheat		<i>\$/bu.</i>			
1997/98	2.58	0.01	0.631	76.7	34.70
1998/99	2.58	0.19	0.663	78.9	34.50
1999/2000	2.58	0.41	0.637	79.0	34.50
2000/2001	2.58	--	0.588	78.9	34.50
2001/2002 ²	2.58	--	0.474	78.2	34.60
					<i>Cwt/acre</i>
Rice		<i>\$/cwt</i>			
1997/98	6.50	0.00	2.710	4.2	48.17
1998/99	6.50	0.08	2.921	4.2	48.17
1999/2000	6.50	1.94	2.820	4.2	48.15
2000/2001	6.50	--	2.600	4.1	48.15
2001/2002 ²	6.50	--	2.100	4.1	48.15
					<i>Bu./acre</i>
Corn		<i>\$/bu.</i>			
1997/98	1.89	0.01	0.486	80.9	102.80
1998/99	1.89	0.14	0.377	82.0	102.60
1999/2000	1.89	0.26	0.363	81.9	102.60
2000/2001	1.89	--	0.334	81.9	102.60
2001/2002 ²	1.89	--	0.269	81.5	102.70
					<i>Bu./acre</i>
Sorghum		<i>\$/bu.</i>			
1997/98	1.76	0.00	0.544	13.1	57.30
1998/99	1.74	0.12	0.452	13.6	56.90
1999/2000	1.74	0.26	0.435	13.7	56.90
2000/2001	1.71	--	0.400	13.6	57.00
2001/2002 ²	1.71	--	0.324	13.5	57.00
					<i>Bu./acre</i>
Barley		<i>\$/bu.</i>			
1997/98	1.57	0.01	0.277	10.5	47.20
1998/99	1.56	0.23	0.284	11.2	46.70
1999/2000	1.59	0.14	0.271	11.2	46.60
2000/2001	1.62	--	0.251	11.2	46.60
2001/2002 ²	1.65	--	0.206	11.0	46.60
					<i>Bu./acre</i>
Oats		<i>\$/bu.</i>			
1997/98	1.11	0.00	0.031	6.2	50.80
1998/99	1.11	0.18	0.031	6.5	50.70
1999/2000	1.13	0.19	0.030	6.5	50.60
2000/2001	1.16	--	0.028	6.5	50.60
2001/2002 ²	1.21	--	0.022	6.5	50.60
					<i>Bu./acre</i>
Soybeans ³		<i>\$/bu.</i>			
1997/98	5.26	0.01	--	--	--
1998/99	5.26	0.45	--	--	--
1999/2000	5.26	0.88	--	--	--
2000/2001	5.26	--	--	--	--
2001/2002	5.26	--	--	--	--
					<i>Lb./acre</i>
Upland cotton		<i>¢/lb.</i>			
1997/98	51.92	0.00	7.625	16.2	608.00
1998/99	51.92	0.09	8.173	16.4	604.00
1999/2000	51.92	0.20	7.880	16.4	604.00
2000/2001	51.92	--	7.330	16.3	604.00
2001/2002 ²	51.92	--	5.990	16.2	605.80

-- = Not available. 1. Weighted average, based on portions of crop receiving marketing loan gains, loan deficiency payments, and no benefits (calculated by Economic Research Service). 2. Estimated payment rates and acres under contract. 3. There are no flexibility contract payments for soybeans.

Information contact: Brenda Chewning, Farm Service Agency (202) 720-8838

Table 20—Fruit

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Citrus¹										
Production (1,000 tons)	12,452	15,274	14,561	15,799	15,712	17,271	17,770	13,633	17,276	16,392
Per capita consumpt. (lb.) ²	24.4	26.0	25.0	24.1	25.2	27.5	27.3	21.0	24.5	25.1
Noncitrus³										
Production (1,000 tons)	17,124	16,554	17,339	16,348	16,103	18,363	16,545	17,330	18,914	16,457
Per capita consumpt. (lb.) ²	73.7	73.8	75.6	73.6	73.9	76.1	76.5	81.6	78.7	--
	2001					2002				
	Feb	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Grower prices										
Apples (¢/pound) ⁴	15.20	14.90	15.20	17.30	21.10	24.70	23.30	22.40	21.70	21.40
Pears (¢/pound) ⁴	12.60	--	22.00	22.90	21.65	19.80	19.05	17.10	14.10	13.80
Oranges (\$/box) ⁵	4.42	3.77	4.33	5.57	6.53	5.12	3.19	3.44	3.89	4.42
Grapefruit (\$/box) ⁵	2.24	3.44	5.01	3.69	6.89	5.29	3.06	2.30	1.98	1.70
Stocks, ending										
Fresh apples (mil. lb.)	3,408	898	487	143	2,806	5,564	4,975	4,355	3,629	2,913
Fresh pears (mil. lb.)	181	0	18	93	554	517	412	322	239	188
Frozen fruits (mil. lb.)	1,372	1,046	1,184	1,142	1,102	1,200	1,156	1,106	1,012	945
Frozen conc. orange juice (mil. single-strength gallons)	745	831	781	690	628	571	574	641	704	720

-- = Not available. 1. Year shown is when harvest concluded. 2. Fresh per capita consumption. 3. Calendar year. 4. Fresh use.

5. U.S. equivalent on-tree returns. *Information contact: Susan Pollack (202) 694-5251*

Table 21—Vegetables

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Production¹										
Total vegetables (1,000 cwt)	689,070	692,022	785,798	751,715	765,645	763,532	732,803	833,622	822,475	780,134
Fresh (1,000 cwt) ^{2,4}	389,597	390,528	416,173	397,125	412,010	436,459	420,012	449,683	479,223	477,212
Processed (tons) ^{3,4}	14,973,630	15,074,707	18,481,238	17,729,497	17,681,732	16,353,639	15,639,548	19,196,942	17,162,580	15,146,100
Mushrooms (1,000 lbs) ⁵	776,357	750,799	782,340	777,870	776,677	808,678	847,760	854,394	838,611	--
Potatoes (1,000 cwt)	425,367	430,349	469,425	445,099	499,254	467,091	475,771	478,216	513,621	444,766
Sweet potatoes (1,000 cwt)	12,005	11,027	13,380	12,821	13,216	13,327	12,382	12,234	13,794	14,355
Dry edible beans (1,000 cwt)	22,615	21,862	28,950	30,689	27,912	29,370	30,418	33,085	26,409	19,541
	2001					2002				
	Feb	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Shipments (1,000 cwt)										
Fresh	18,848	30,270	20,761	22,934	15,340	22,433	19,075	18,804	24,508	20,758
Iceberg lettuce	2,827	3,436	3,060	3,773	2,976	4,097	2,935	2,683	3,381	2,546
Tomatoes, all	3,778	3,240	2,271	2,702	2,223	3,396	2,871	3,397	4,992	4,130
Dry-bulb onions	2,976	3,212	3,448	4,311	3,844	4,563	3,521	3,433	4,291	3,419
Others ⁶	9,267	20,382	11,982	12,148	6,297	10,377	9,748	9,291	11,844	10,663
Potatoes, all	14,101	12,947	9,646	11,653	10,063	12,646	10,987	11,664	13,870	11,368
Sweet potatoes	274	189	161	226	266	412	651	400	287	276

-- = Not available. 1. Calendar year except mushrooms. 2. Includes fresh production of asparagus, broccoli, carrots, cauliflower, celery, sweet corn, lettuce, honeydews, onions, & tomatoes through 1999. In 2000, greens, okra, chile peppers, pumpkins, radishes, and squash were added.

3. Includes processing production of snap beans, sweet corn, green peas, tomatoes, cucumbers (for pickles), asparagus, broccoli, carrots, and cauliflower. 4. Data after 1991 not comparable to previous years because commodity estimates reinstated in 1992 are included. 5. Fresh and processing agaricus mushrooms only. Excludes specialty varieties. Crop year July 1 - June 30. 6. Includes snap beans, broccoli, cabbage, cauliflower, celery, sweet corn, cucumbers, eggplant, bell peppers, honeydews, and watermelons.

Information contact: Gary Lucier (202) 694-5253

Table 22—Other Commodities

	Annual			1999		2000				2001	
	1998	1999	2000	IV	I	II	III	IV	I	II	
Sugar											
Production ¹	7,891	9,083	8,912	4,667	2,681	922	772	4,537	2,660	827	
Deliveries ¹	9,851	10,167	10,091	2,609	2,348	2,513	2,641	2,589	2,399	2,524	
Stocks, ending ¹	3,423	3,855	4,338	3,855	4,551	3,498	2,219	4,338	5,122	3,720	
Coffee											
Composite green price ² N.Y. (¢/lb.)	114.43	88.49	71.94	91.79	85.66	75.78	66.73	59.63	54.95	51.97	
	Annual			2000							
	1997	1998	1999	Mar	Apr	May	Jun	Jul	Aug	Sep	
Tobacco											
Avg. price to grower ³											
Flue-cured (\$/lb.)	1.73	1.76	1.74	--	--	--	--	--	1.69	1.82	
Burley (\$/lb.)	1.91	1.90	1.90	1.77	--	--	--	--	--	--	
Domestic taxable removals											
Cigarettes (bil.)	471.4	457.9	432.6	38.8	29.3	40.8	39.6	34.2	40.8	33.1	
Large cigars (mil.) ⁴	3,552	3,721	3,844	333.9	314.0	345.7	365.8	319.6	352.7	314.4	

-- = Not available. 1. 1,000 short tons, raw value. Quarterly data shown at end of each quarter. 2. Net imports of green and processed coffee.

3. Crop year July-June for flue-cured, October-September for burley. 4. Includes imports of large cigars. *Information contacts: sugar and coffee, Fannye Jolly (202) 694-5249; tobacco, Tom Capehart (202) 694-5245*

World Agriculture

Table 23—World Supply & Utilization of Major Crops, Livestock, &

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01 F	2001/02 F
<i>Million units</i>										
Wheat										
Area (hectares)	222.9	221.9	214.5	218.7	230.0	228.0	224.7	216.6	218.9	214.7
Production (metric tons)	562.1	558.6	524.0	538.4	581.9	609.2	588.7	585.9	582.3	577.0
Exports (metric tons) ¹	113.1	101.6	101.5	99.1	100.1	104.0	101.9	112.3	102.9	107.2
Consumption (metric tons) ²	549.8	556.2	546.9	548.4	575.8	583.4	584.3	591.6	589.5	596.0
Ending stocks (metric tons) ³	170.0	172.4	149.4	139.5	145.6	171.3	175.8	170.0	163.0	144.0
Coarse grains										
Area (hectares)	325.9	318.7	324.0	313.9	322.7	311.2	307.3	300.7	296.4	299.7
Production (metric tons)	871.6	798.9	871.3	802.9	908.5	883.9	889.0	876.5	856.9	873.2
Exports (metric tons) ¹	93.4	86.3	98.4	87.9	91.2	85.6	96.4	104.3	103.9	101.3
Consumption (metric tons) ²	844.9	838.6	859.6	841.8	875.0	873.4	869.9	881.9	879.5	892.4
Ending stocks (metric tons) ³	218.7	179.0	190.6	151.8	185.3	195.8	215.0	209.6	187.0	167.7
Rice, milled										
Area (hectares)	146.4	144.9	147.4	148.0	149.8	151.3	152.4	154.9	151.7	150.1
Production (metric tons)	355.7	355.3	364.5	371.5	380.3	386.9	394.1	408.7	397.4	395.3
Exports (metric tons) ¹	14.9	16.5	21.0	19.7	18.9	27.6	24.9	22.8	24.5	23.1
Consumption (metric tons) ²	358.6	359.2	366.1	372.1	379.0	379.6	387.4	398.1	404.2	405.5
Ending stocks (metric tons) ³	123.9	120.0	118.4	117.8	119.0	126.3	133.0	143.6	136.8	126.5
Total grains										
Area (hectares)	695.2	685.5	685.9	680.6	702.5	690.5	684.4	672.2	667.0	664.5
Production (metric tons)	1,789.4	1,712.8	1,759.8	1,712.8	1,870.7	1,880.0	1,871.8	1,871.1	1,836.6	1,845.5
Exports (metric tons) ¹	221.4	204.4	220.9	206.7	210.2	217.2	223.2	239.4	231.3	231.6
Consumption (metric tons) ²	1,753.3	1,754.0	1,772.6	1,762.3	1,829.8	1,836.4	1,841.6	1,871.6	1,873.2	1,893.9
Ending stocks (metric tons) ³	512.6	471.4	458.4	409.1	449.9	493.4	523.8	523.2	486.8	438.2
Oilseeds										
Crush (metric tons)	184.4	190.1	208.1	217.5	216.7	226.4	240.7	247.6	256.0	265.5
Production (metric tons)	227.5	229.4	261.9	258.9	261.4	286.5	294.7	303.3	312.6	323.8
Exports (metric tons)	38.2	38.7	44.1	44.3	49.6	54.0	54.9	64.5	71.9	71.9
Ending stocks (metric tons)	23.6	20.3	27.2	22.2	19.1	28.6	31.8	34.3	33.6	32.5
Meals										
Production (metric tons)	125.2	131.7	142.1	147.3	147.8	153.9	164.6	168.8	177.0	183.7
Exports (metric tons)	40.8	44.9	46.7	49.8	50.7	52.0	54.0	56.1	56.8	58.9
Oils										
Production (metric tons)	61.1	63.7	69.6	73.1	73.7	75.2	80.6	85.9	89.0	91.1
Exports (metric tons)	21.3	24.3	27.1	26.0	28.3	29.8	31.5	32.8	34.6	35.7
Cotton										
Area (hectares)	32.7	30.7	32.2	36.0	33.8	33.8	33.0	32.3	32.0	34.0
Production (bales)	82.5	77.1	86.0	93.1	89.7	91.8	85.0	87.3	88.5	97.2
Exports (bales)	25.5	26.8	28.4	27.3	26.8	26.7	23.7	27.3	26.3	29.1
Consumption (bales)	85.9	85.4	84.7	86.0	88.1	87.3	85.3	91.9	92.1	92.0
Ending stocks (bales)	34.7	26.8	29.8	36.7	40.1	43.9	45.1	41.6	38.8	44.0
	1993	1994	1995	1996	1997	1998	1999	2000	2001 E	2002 F
Beef and Pork⁴										
Production (metric tons)	111.6	116.7	122.1	116.6	122.1	127.1	130.3	131.1	138.9	134.9
Consumption (metric tons)	110.6	115.7	120.7	114.1	120.5	125.5	129.2	129.9	131.4	133.9
Exports (metric tons) ¹	6.6	7.2	7.4	7.7	8.4	8.1	9.0	9.2	9.3	9.7
Poultry⁴										
Production (metric tons)	40.5	43.2	47.5	50.4	53.7	54.6	57.7	59.7	61.9	62.9
Consumption (metric tons)	39.4	42.0	47.0	49.6	53.1	53.7	56.8	58.8	60.4	61.3
Exports (metric tons) ¹	2.8	3.6	4.5	5.1	5.1	5.2	5.5	5.9	6.8	7.1
Dairy										
Milk production (metric tons) ⁵	--	--	--	364.4	365.6	368.4	372.0	375.9	376.3	--

-- = Not available. E = Estimated, F = forecast. 1. Excludes intra-EU trade but includes intra-FSU trade. 2. Where stocks data are not available, consumption includes stock changes. 3. Stocks data are based on differing marketing years and do not represent levels at a given date. Data not available for all countries. 4. Calendar year, selected countries. 5. Data prior to 1989 no longer comparable.

Information contacts: Crops, Ed Allen (202) 694-5288; red meat and poultry, Leland Southard (202) 694-5187; dairy, LaVerne Williams (202) 694-5190

U.S. Agricultural Trade

Table 24—Prices of Principal U.S. Agricultural Trade Products

	Annual			2001					2002	
	1999	2000	2001	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Export commodities										
Wheat, f.o.b. vessel, Gulf ports (\$/bu.)	3.04	3.17	3.50	3.55	3.39	3.39	3.46	3.37	3.46	3.43
Corn, f.o.b. vessel, Gulf ports (\$/bu.)	2.29	2.24	2.26	2.35	2.27	2.19	2.28	2.35	2.34	2.31
Grain sorghum, f.o.b. vessel, Gulf ports (\$/bu.)	2.14	2.23	2.39	2.52	2.40	2.40	2.41	2.48	2.45	2.38
Soybeans, f.o.b. vessel, Gulf ports (\$/bu.)	5.02	5.26	4.93	4.96	5.06	4.46	4.73	4.75	4.75	4.73
Soybean oil, Decatur (¢/lb.)	17.51	15.01	14.49	12.38	15.46	14.38	15.23	15.10	14.82	14.15
Soybean meal, Decatur (\$/ton)	141.52	174.69	168.49	166.08	171.49	165.45	166.10	154.18	158.01	153.11
Cotton, 7-market avg. spot (¢/lb.)	52.30	57.47	39.68	54.10	33.22	28.42	31.23	32.21	32.13	31.60
Tobacco, avg. price at auction (¢/lb.)	177.82	182.73	186.66	201.48	188.49	190.58	198.03	199.53	195.96	188.95
Rice, f.o.b., mill, Houston (\$/cwt)	16.99	14.83	14.55	15.00	14.25	14.00	13.75	12.75	12.75	12.25
Inedible tallow, Chicago (¢/lb.)	12.99	9.92	12.50	8.59	14.15	11.18	--	10.50	9.50	10.80
Import commodities										
Coffee, N.Y. spot (\$/lb.)	1.05	0.92	0.55	0.65	0.44	0.38	0.42	0.42	0.43	0.43
Rubber, N.Y. spot (¢/lb.)	36.66	37.72	33.88	35.66	33.08	31.97	31.14	30.35	32.21	34.42
Cocoa beans, N.Y. (\$/lb.)	0.47	0.36	0.47	0.49	0.44	0.47	0.54	0.59	0.61	0.65

-- = Not available. Information contact: Wilma Davis (202) 694-5304

Table 25—Trade Balance

	Fiscal year			2000		2001				
	2000	2001	2002 F	Dec	Jul	Aug	Sep	Oct	Nov	Dec
\$ million										
Exports										
Agricultural	50,798	52,783	54,500	4,485	3,939	4,468	3,891	5,253	5,260	4,685
Nonagricultural	650,853	639,083	--	55,037	45,948	50,296	46,486	50,089	47,869	45,552
Total ¹	701,651	691,866	--	59,522	49,887	54,764	50,377	55,342	53,129	50,237
Imports										
Agricultural	38,864	39,030	40,000	3,203	3,223	3,163	3,039	3,515	3,365	3,143
Nonagricultural	1,128,904	1,136,637	--	94,233	90,616	92,700	85,795	96,658	87,816	78,480
Total ²	1,167,768	1,175,667	--	97,436	93,839	95,863	88,834	100,173	91,181	81,623
Trade balance										
Agricultural	11,934	13,753	14,500	1,282	716	1,305	852	1,738	1,895	1,542
Nonagricultural	-478,051	-497,554	--	-39,196	-44,668	-42,404	-39,309	-46,569	-39,947	-32,928
Total ³	-466,117	-483,801	--	-37,914	-43,952	-41,099	-38,457	-44,831	-38,052	-31,386

F = Forecast. -- = Not available. Fiscal year (Oct. 1-Sep. 30). 1. Domestic exports including Department of Defense shipments (f.a.s. value). 2. Imports for consumption (customs value). 3. Preliminary. Information contact: Mary Fant (202) 694-5272.

Table 26—Indexes of Real Trade-Weighted Dollar Exchange Rates¹

	Annual			2001							2002
	1999	2000	2001	Jan	Aug	Sep	Oct	Nov	Dec	Jan	
	1995 = 100										
Total U.S. Trade	114.2	119.0	129.3	126.8	129.0	131.1	130.9	130.7	131.5	131.9	
U.S. markets											
All agricultural trade	117.5	120.2	132.4	129.4	131.8	134.0	133.7	133.7	135.5	135.7	
Bulk commodities	116.6	121.2	135.5	132.5	135.1	137.4	136.9	136.7	138.7	138.7	
Corn	116.3	119.2	136.5	133.1	136.4	138.7	138.3	138.5	141.8	142.1	
Cotton	112.4	118.3	130.6	127.4	129.0	131.9	132.1	131.1	131.5	131.2	
Rice	112.5	117.8	129.9	125.3	129.8	132.2	132.0	131.5	133.0	132.5	
Soybeans	119.4	127.3	138.5	136.4	138.1	139.7	139.0	138.9	140.1	140.0	
Tobacco, raw	112.8	134.3	145.6	139.7	144.8	146.4	146.5	146.0	147.6	147.7	
Wheat	124.6	120.2	139.7	137.5	140.4	143.2	142.4	142.1	144.5	144.3	
High-value products	118.3	119.4	129.9	126.9	129.3	131.2	131.2	131.2	133.0	133.3	
Processed intermediates	115.1	120.2	132.4	130.0	132.2	134.3	133.8	133.5	134.6	134.8	
Soymeal	107.2	117.0	146.3	146.7	148.3	151.3	150.4	149.7	149.9	149.8	
Soyoil	98.1	105.2	109.7	107.6	109.5	110.8	110.1	109.7	109.4	109.5	
Produce and horticulture	117.3	122.0	131.2	127.9	130.5	132.4	132.7	132.9	134.4	134.7	
Fruits	116.8	119.2	129.6	125.6	128.8	130.8	131.3	131.7	133.7	134.1	
Vegetables	113.6	114.4	121.7	118.1	121.0	123.3	124.1	124.2	126.2	126.5	
High-value processed	121.4	117.8	127.4	124.1	126.4	128.3	128.5	128.8	131.2	131.6	
Fruit juices	120.1	123.4	132.8	129.1	131.9	133.7	134.2	134.5	136.9	137.5	
Poultry	155.0	116.9	117.0	116.1	116.5	117.2	116.6	116.2	116.2	116.3	
Red meats	124.0	121.7	135.8	130.2	134.0	135.8	136.9	138.1	143.7	144.4	
U.S. competitors											
All agricultural trade	122.1	135.5	142.6	140.4	141.9	143.7	143.3	142.5	141.6	142.3	
Bulk commodities	130.4	134.0	141.0	137.9	139.7	142.4	142.5	140.9	139.8	141.7	
Corn	120.5	134.0	141.0	139.8	140.5	141.8	141.7	142.4	143.4	151.1	
Cotton	130.7	133.4	130.0	125.4	130.0	132.8	131.2	129.7	129.5	134.3	
Rice	120.5	131.1	143.6	140.3	143.3	145.1	144.5	142.9	143.2	143.3	
Soybeans	132.1	134.6	151.6	138.9	156.6	161.8	163.1	157.6	151.7	163.2	
Tobacco, raw	127.3	121.8	124.1	121.0	124.4	126.5	125.0	119.8	116.0	115.4	
Wheat	118.5	129.8	136.8	134.0	135.6	138.6	137.9	137.1	137.2	140.3	
High-value products	125.2	139.1	146.0	143.8	145.4	147.3	146.6	145.7	144.9	145.6	
Processed intermediates	127.1	138.2	146.2	142.8	145.5	148.1	147.7	146.4	145.4	147.2	
Soymeal	132.0	136.9	152.6	142.0	156.4	161.2	162.0	156.3	150.6	160.6	
Soyoil	123.3	130.0	142.3	134.6	144.5	147.6	148.4	146.1	142.9	153.9	
Produce and horticulture	120.0	133.3	137.9	136.9	137.1	138.5	137.9	137.4	136.9	136.8	
Fruits	123.5	135.9	145.7	143.1	145.2	146.7	146.3	145.2	145.1	144.5	
Vegetables	109.2	121.7	125.6	125.0	125.2	126.2	125.3	124.8	124.3	123.8	
High-value processed	125.7	141.3	148.3	146.5	147.8	149.4	148.6	147.9	147.1	147.3	
Fruit juices	122.1	137.0	145.2	142.7	144.8	146.8	146.2	145.6	145.5	145.8	
Poultry	121.6	134.9	144.6	140.8	145.4	147.1	146.9	145.2	143.0	143.0	
Red meats	122.3	137.8	145.9	142.7	144.8	148.1	146.9	145.7	145.0	147.6	
U.S. suppliers											
All agricultural trade	113.5	120.0	126.0	123.6	124.8	127.9	127.5	126.3	125.4	125.6	
High-value products	111.6	118.2	123.2	121.4	122.4	125.2	124.4	123.5	122.8	123.2	
Processed intermediates	114.8	121.4	127.4	124.8	126.4	129.3	128.9	128.2	127.9	128.1	
Grains and feeds	113.0	117.9	124.5	121.7	124.0	126.3	126.4	126.0	126.6	126.5	
Vegetable oils	120.9	130.1	138.4	134.9	137.3	139.9	139.9	139.0	138.2	137.9	
Produce and horticulture	101.1	103.7	104.4	105.0	103.7	106.1	104.9	103.9	102.5	102.1	
Fruits	97.2	98.0	102.7	100.4	103.0	106.9	106.1	104.0	102.1	103.0	
Vegetables	84.1	81.3	79.3	81.3	78.3	80.6	78.6	78.3	77.4	77.1	
High-value processed	114.9	123.7	130.3	127.8	129.6	132.5	131.8	130.8	130.3	131.2	
Cocoa and products	126.1	137.6	143.2	140.0	140.0	143.0	144.1	143.3	142.1	142.3	
Coffee and products	111.6	116.4	124.4	123.2	124.7	127.8	127.2	124.8	122.0	121.0	
Dairy products	122.5	137.9	144.2	141.7	142.5	145.7	144.0	143.8	143.0	143.3	
Fruit juices	122.3	127.8	139.3	131.9	141.2	145.4	145.4	141.7	138.2	144.7	
Meats	105.6	115.4	127.8	124.6	126.3	130.5	129.4	128.6	128.6	129.5	

Real indexes adjust nominal exchange rates for relative rates of inflation among countries. A higher value means the dollar has appreciated.

The weights used for "total U.S. trade" index are based on U.S. total merchandise exports to the largest 85 trading partners. Weights are based on relative importance of major U.S. customers, competitors in world markets, and suppliers to the U.S. Indexes are subject to revision for up to 1 year due to delayed reporting by some countries. High-value products are total agricultural products minus bulk commodities.

Source: Nominal exchange rates are obtained from the IMF International Financial Statistics. Exchange rates for the EU-11 are obtained from the Board of Governors of the Federal Reserve System. Full historical series are available back to January 1970 at

<http://usda.mannlib.cornell.edu/data-sets/international/88021/>

1. A major revision to the weighting scheme and commodity definitions was completed in May 2000. This significantly altered the series from previous versions.

Information contact: Mathew Shane (202) 694-5282 or email: mshane@ers.usda.gov.

Table 27—U.S. Agricultural Exports & Imports

	Fiscal year			Dec		Fiscal year			Dec	
	2000	2001	2002 F	2000	2001	2000	2001	2002 F	2000	2001
	1,000 units					\$ million				
Exports										
Animals, live	--	--	--	--	--	609	727	--	85	91
Meats and preps., excl. poultry (mt) ¹	2,439	2,454	1,900	186	207	5,429	5,199	4,800	403	416
Dairy products	--	--	--	--	--	998	1,118	1,100	82	88
Poultry meats (mt)	2,781	3,089	3,200	202	247	1,943	2,218	2,300	147	198
Fats, oils, and greases (mt)	1,207	1,046	1,000	83	94	421	319	--	25	31
Hides and skins, incl. furskins	--	--	--	--	--	1,428	1,943	2,100	132	150
Cattle hides, whole (no.)	20,904	22,602	--	1,643	2,109	1,117	1,446	--	100	114
Mink pelts (no.)	4,352	4,277	--	80	95	111	122	--	3	3
Grains and feeds (mt) ²	103,653	98,844	--	8,389	8,230	13,789	13,830	14,400	1,173	1,155
Wheat (mt) ³	27,838	25,187	26,000	2,496	2,209	3,384	3,238	3,600	314	299
Wheat flour (mt)	837	496	600	54	49	134	107	--	11	13
Rice (mt)	3,307	3,158	3,200	412	293	905	778	700	95	65
Feed grains, incl. products (mt) ⁴	57,199	55,791	57,300	4,197	4,377	5,483	5,460	5,600	417	436
Feeds and fodders (mt)	12,951	12,741	12,500	1,091	1,173	2,483	2,775	2,800	213	224
Other grain products (mt)	1,521	1,472	--	138	129	1,400	1,471	--	123	119
Fruits, nuts, and preps. (mt)	3,748	3,969	--	335	292	3,877	4,097	4,800	334	311
Fruit juices, incl.										
froz. (1,000 hectoliters)	11,899	10,785	--	871	779	715	681	--	54	51
Vegetables and preps.	--	--	--	--	--	4,440	4,513	3,100	393	390
Tobacco, unmanufactured (mt)	180	176	200	21	19	1,227	1,181	1,400	138	130
Cotton, excl. linters (mt) ⁵	1,473	1,656	2,200	114	201	1,809	2,080	2,200	162	189
Seeds (mt)	720	703	--	56	67	772	727	700	79	91
Sugar, cane or beet (mt)	113	98	--	7	5	40	38	--	3	3
Oilseeds and products (mt)	36,053	37,093	39,500	3,787	4,550	8,391	8,708	9,200	867	995
Oilseeds (mt)	--	--	--	--	--	--	--	--	--	--
Soybeans (mt)	26,045	26,659	28,000	2,900	3,627	5,071	5,106	5,100	569	656
Protein meal (mt)	6,867	7,186	--	544	569	1,258	1,419	--	113	108
Vegetable oils (mt)	2,134	2,067	--	246	237	1,349	1,175	--	124	143
Essential oils (mt)	53	55	--	4	4	592	675	--	44	47
Other	--	--	--	--	--	4,318	4,728	--	364	348
Total	--	--	--	--	--	50,798	52,783	54,500	4,485	4,685
Imports										
Animals, live	--	--	--	--	--	1,735	2,198	2,300	273	171
Meats and preps., excl. poultry (mt)	1,555	1,600	1,700	116	94	3,723	4,091	4,400	291	252
Beef and veal (mt)	1,027	1,056	--	69	50	2,405	2,645	--	174	138
Pork (mt)	402	399	--	35	31	958	1,038	--	84	75
Dairy products	--	--	--	--	--	1,653	1,727	1,700	148	158
Poultry and products	--	--	--	--	--	287	258	--	17	24
Fats, oils, and greases (mt)	105	107	--	8	7	69	63	--	4	4
Hides and skins, incl. furskins (mt)	--	--	--	--	--	160	162	--	17	16
Wool, unmanufactured (mt)	25	21	--	1	1	66	53	--	3	2
Grains and feeds	--	--	--	--	--	3,038	3,187	3,500	271	299
Fruits, nuts, and preps.,										
excl. juices (mt) ⁶	8,367	8,123	8,300	688	688	4,545	4,615	5,400	436	417
Bananas and plantains (mt)	4,396	4,093	4,100	321	353	1,128	1,156	1,200	86	103
Fruit juices (1,000 hectoliters)	32,226	29,284	28,000	1,846	2,467	783	649	--	41	56
Vegetables and preps.	--	--	--	--	--	4,660	5,182	5,400	441	438
Tobacco, unmanufactured (mt)	220	211	300	18	21	651	649	800	61	58
Cotton, unmanufactured (mt)	34	49	--	2	3	28	23	--	1	2
Seeds (mt)	444	307	--	21	21	491	431	--	24	20
Nursery stock and cut flowers	--	--	--	--	--	1,165	1,156	1,200	82	78
Sugar, cane or beet (mt)	1,368	1,382	--	73	84	484	528	--	28	32
Oilseeds and products (mt)	4,075	4,077	3,900	300	262	1,871	1,689	1,800	133	117
Oilseeds (mt)	1,103	997	--	33	31	310	280	--	13	12
Protein meal (mt)	1,205	1,150	--	111	82	152	152	--	15	11
Vegetable oils (mt)	1,767	1,930	--	156	149	1,410	1,257	--	105	94
Beverages, excl. fruit										
juices (1,000 hectoliters)	--	--	--	--	--	4,701	4,991	--	346	374
Coffee, tea, cocoa, spices (mt)	2,841	2,489	--	189	259	5,218	3,978	--	315	370
Coffee, incl. products (mt)	1,411	1,213	1,200	92	110	2,906	1,761	1,600	147	130
Cocoa beans and products (mt)	1,045	898	1,000	69	119	1,465	1,390	1,500	102	178
Rubber and allied gums (mt)	1,249	1,059	1,000	91	65	841	668	600	58	35
Other	--	--	--	--	--	2,694	2,733	--	213	219
Total	--	--	--	--	--	38,864	39,030	40,000	3,203	3,143

F = Forecast. -- = Not available. Projections are fiscal years (Dec.1 through Sep. 30) and are from Outlook for U.S. Agricultural Exports. 2000 and 2001 data are from *Foreign Agricultural Trade of the U.S.* 1. Projection includes beef, pork, and variety meat. 2. Projection includes pulses. 3. Value projection includes wheat flour. 4. Projection excludes grain products. 5. Projection includes linters. 6. Value projection includes juice.

Information contact: Mary Fant (202) 694-5272.

Table 28—U.S. Agricultural Exports by Region

	Fiscal year			2000		2001				
	2000	2001	2002 F	Dec	Jul	Aug	Sep	Oct	Nov	Dec
	\$ million									
Region and country										
Western Europe	6,546	6,779	7,000	702	417	474	398	735	929	775
European Union ¹	6,206	6,267	6,600	685	388	455	382	700	724	728
Belgium-Luxembourg	516	626	--	79	40	49	46	57	81	54
France	348	352	--	53	36	16	21	38	36	68
Germany	912	906	--	73	69	72	55	113	72	87
Italy	559	508	--	55	28	43	46	70	58	70
Netherlands	1,390	1,397	--	184	54	68	59	125	183	167
United Kingdom	1,032	1,051	--	71	87	73	80	93	129	108
Portugal	134	138	--	22	6	9	4	18	22	20
Spain, incl. Canary Islands	642	591	--	83	17	61	32	99	91	86
Other Western Europe	340	512	400	17	30	19	16	35	205	46
Switzerland	250	422	--	12	23	8	8	25	197	38
Eastern Europe	168	191	200	13	14	12	11	14	30	34
Poland	47	83	--	4	8	6	4	5	6	12
Former Yugoslavia	67	34	--	2	1	1	1	2	12	13
Romania	12	24	--	5	1	1	1	2	4	4
Former Soviet Union	921	1,029	1,300	58	82	106	95	128	131	87
Russia	659	823	1,100	41	73	88	81	96	113	69
Asia	21,931	22,321	23,100	1,953	1,618	1,823	1,600	2,186	2,075	1,922
West Asia (Mideast)	2,364	2,194	2,100	202	161	225	160	310	207	194
Turkey	701	569	600	74	43	46	38	81	56	37
Iraq	8	8	--	--	--	--	--	--	--	--
Israel, incl. Gaza and W. Bank	459	436	--	50	20	48	22	48	30	51
Saudi Arabia	481	470	500	41	44	57	41	22	31	36
South Asia	415	571	700	53	68	60	59	90	83	92
Bangladesh	82	105	--	16	8	9	7	28	13	16
India	185	294	--	20	36	38	34	40	40	42
Pakistan	93	97	--	6	9	13	10	13	19	25
China	1,466	1,884	2,300	168	69	75	74	220	228	182
Japan	9,304	8,953	9,000	775	615	699	652	774	757	682
Southeast Asia	2,581	2,923	2,900	194	219	228	187	290	288	247
Indonesia	675	879	900	50	71	69	62	96	46	67
Philippines	866	836	800	68	55	71	52	67	90	56
Other East Asia	5,800	5,796	6,100	561	486	537	468	502	512	525
Korea, Rep.	2,532	2,552	2,800	253	221	250	204	202	233	239
Hong Kong	1,249	1,253	1,300	123	93	110	107	126	118	99
Taiwan	2,010	1,985	2,000	185	172	177	156	175	162	186
Africa	2,237	2,125	2,100	217	168	185	204	208	226	181
North Africa	1,522	1,467	1,500	153	116	134	149	129	181	123
Morocco	139	120	--	24	4	11	8	4	9	17
Algeria	254	211	--	16	11	12	18	26	28	25
Egypt	1,056	1,008	1,100	84	97	104	106	89	132	71
Sub-Saharan	715	659	600	64	52	51	55	79	45	58
Nigeria	160	233	--	14	26	20	23	26	13	23
S. Africa	165	108	--	6	10	11	7	7	5	8
Latin America and Caribbean	10,626	11,572	11,600	875	940	1,140	892	1,092	1,023	972
Brazil	253	219	200	19	21	18	14	23	22	23
Caribbean Islands	1,463	1,399	1,300	113	103	117	109	134	138	112
Central America	1,132	1,185	1,100	94	95	120	95	108	139	99
Colombia	427	442	400	29	38	39	34	39	30	44
Mexico	6,317	7,289	7,600	542	584	745	570	697	606	604
Peru	200	182	--	5	21	21	17	27	17	18
Venezuela	405	416	400	27	44	51	26	33	34	29
Canada	7,525	8,011	8,500	607	649	664	624	768	733	653
Oceania	488	473	500	41	32	38	41	51	46	35
Total	50,798	52,783	54,500	4,485	3,939	4,468	3,891	5,253	5,260	4,685

F = Forecast. -- = Not available. Based on fiscal year beginning Oct. 1 and ending Sep. 30. 1. Austria, Finland, and Sweden are included in the European Union. Note: Adjusted for transshipments through Canada for 1998 and 1999 through December 1999, transshipments are not distributed by country for 2000 and 2001, but are only included in total. Information contact: Mary Fant (202) 694-5272.

Farm Income

Table 29—Value Added to the U.S. Economy by the Agricultural Sector

	1998	1999	2000	2001F	01/07/02 2002F	1992-2001 average
	\$ billion					
Final crop output	101.5	93.2	95.3	97.3	98.9	98.3
Food grains	8.8	7.0	6.6	6.5	6.6	8.7
Feed crops	22.7	19.6	20.0	20.9	21.9	22.3
Cotton	6.1	4.7	4.6	4.4	3.7	5.7
Oil crops	17.4	13.6	13.9	14.1	14.7	15.2
Tobacco	2.8	2.3	2.3	2.1	2.1	2.6
Fruits and tree nuts	11.6	12.3	12.7	13.0	13.3	11.7
Vegetables	15.2	15.2	15.9	16.2	16.4	14.6
All other crops	17.2	17.9	18.2	18.7	19.0	16.2
Home consumption	0.1	0.1	0.1	0.1	0.2	0.1
Value of inventory adjustment ¹	-0.3	0.4	1.0	1.3	0.9	--
Final animal output	94.2	95.3	99.3	106.0	106.8	94.0
Meat animals	43.3	45.6	53.0	53.1	53.8	47.9
Dairy products	24.1	23.2	20.6	24.7	22.4	21.5
Poultry and eggs	22.9	22.9	21.8	24.2	26.1	20.7
Miscellaneous livestock	3.7	3.8	4.1	4.1	4.1	3.5
Home consumption	0.3	0.4	0.4	0.4	0.4	0.4
Value of inventory adjustment ¹	-0.3	-0.6	-0.6	-0.5	0.0	--
Services and forestry	23.7	25.4	24.0	24.2	24.2	21.1
Machine hire and customwork	2.2	2.0	2.2	2.3	2.3	2.1
Forest products sold	3.1	2.7	2.8	2.8	2.8	2.7
Other farm income	8.7	10.2	8.7	8.7	8.5	6.8
Gross imputed rental value of farm dwellings	9.8	10.4	10.4	10.5	10.6	9.5
Final agricultural sector output ²	219.5	213.8	218.6	227.5	229.9	213.4
<i>Minus</i> Intermediate consumption outlays:	118.6	119.6	122.4	126.6	127.8	113.0
Farm origin	44.8	45.6	47.7	49.6	50.6	44.0
Feed purchased	25.0	24.5	24.5	26.3	28.3	24.0
Livestock and poultry purchased	12.6	13.8	15.8	15.5	14.5	13.7
Seed purchased	7.2	7.2	7.3	7.8	7.8	6.3
Manufactured inputs	28.2	27.1	28.7	29.4	28.8	26.8
Fertilizers and lime	10.6	9.9	10.0	11.1	10.6	9.9
Pesticides	9.0	8.6	8.5	8.5	8.6	8.0
Petroleum fuel and oils	5.6	5.6	7.2	6.7	6.5	5.9
Electricity	2.9	3.0	3.0	3.1	3.1	2.9
Other intermediate expenses	45.6	46.9	46.0	47.7	48.4	42.2
Repair and maintenance of capital items	10.4	10.5	10.8	11.2	11.6	10.0
Machine hire and customwork	5.4	5.3	5.0	5.2	5.2	4.8
Marketing, storage, and transportation	6.9	7.3	7.5	7.9	8.0	6.8
Contract labor	2.4	2.5	2.7	2.8	2.9	2.2
Miscellaneous expenses	20.6	21.4	20.0	20.6	20.7	18.4
<i>Plus</i> Net government transactions:	4.9	14.2	15.5	13.7	3.1	5.9
+ Direct government payments	12.4	21.5	22.9	21.1	10.7	13.0
- Motor vehicle registration and licensing fees	0.5	0.4	0.5	0.5	0.5	0.4
- Property taxes	7.0	6.8	6.9	6.9	7.1	6.7
Gross value added	105.7	108.4	111.7	114.6	105.3	106.3
<i>Minus</i> Capital consumption	20.0	20.3	20.6	20.2	20.4	19.4
Net value added ²	85.8	88.1	91.1	94.4	84.9	86.8
<i>Minus</i> Factor payments:	42.9	43.8	44.7	45.1	44.3	40.4
Employee compensation (total hired labor)	16.9	17.5	17.3	18.1	18.7	15.4
Net rent received by nonoperator landlords	12.7	12.8	13.2	12.4	11.5	12.2
Real estate and non-real estate interest	13.4	13.6	14.1	14.6	14.1	12.8
Net farm income ²	42.9	44.3	46.4	49.3	40.6	46.4

F = forecast. P = preliminary. -- = not available. Numbers may not add due to rounding. 1. A positive value of inventory change represents current-year production not sold by December 31. A negative value is an offset to production from prior years included in current-year sales. 2. Final sector output is the gross value of commodities and services produced within a year. Net value added is the sector's contribution to the National economy. Net farm income is farm operators' share of income from the sector's production activities. The concepts presented are consistent with those employed by the Organization for Economic Cooperation and Development (OECD).

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To confirm that this table contains the current forecast, go to <http://www.ers.usda.gov/data/farmincome/finfidmu.htm>

Table 30—Farm Income Statistics

	1998	1999	2000	2001F	2002F	1992-2001 av.
	<i>\$ billion</i>					
Cash income statement						
1. Cash receipts	195.8	188.1	193.6	201.9	204.3	190.5
Crops ¹	101.7	92.6	94.1	95.8	97.9	96.9
Livestock	94.1	95.5	99.5	106.1	106.4	93.6
2. Direct Government payments ²	12.4	21.5	22.9	21.1	10.7	13.0
3. Farm-related income ³	13.9	15.0	13.6	13.7	13.6	11.6
4. Gross cash income (1+2+3)	222.1	224.6	230.1	236.7	228.6	215.2
5. Cash expenses ⁴	167.4	168.9	172.6	177.2	177.6	159.0
6. Net cash income ⁵ (4-5)	54.8	55.7	57.5	59.5	50.9	56.1
Farm income statement						
7. Gross cash income (1+2+3)	222.1	224.6	230.1	236.7	228.6	215.2
8. Noncash income ⁶	10.3	10.9	11.0	11.1	11.2	10.0
9. Value of inventory adjustment	-0.6	-0.2	0.5	0.9	0.9	--
10. Gross farm income (7+8+9)	231.8	235.3	241.5	248.6	240.6	226.4
11. Total production expenses	189.0	191.0	195.1	199.4	200.0	180.0
12. Net farm income (10-11)	42.9	44.3	46.4	49.3	40.6	46.4

F = forecast. P = preliminary. Numbers may not add due to rounding. 1. Includes commodities placed under CCC loans and profits made on loans redeemed. 2. Direct government payments include only payments made directly to farmers, including realized marketing loan gains. In publications prior to May of 2001, marketing loan gains were included in cash receipts rather than in government payments. 3. Income from custom labor, machine hire, recreational activities, forest product sales, and other farm sources. 4. Excludes depreciation and perquisites to hired labor.

5. Excludes farm operator dwellings. 6. Value of farm products consumed on farms where produced plus the imputed rental value of farm dwellings.

6. Value of farm products consumed on farms where produced plus the imputed rental value of farm dwellings.

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The current farm income forecast and historical statistics can always be found at <http://www.ers.usda.gov/Briefing/FarmIncome/>

To confirm that this table contains the current forecast, go to <http://www.ers.usda.gov/data/farmincome/finfidmu.htm>

Table 31—Average Income to Farm Operator Households¹

	1998	1999	2000 ²	2001F	2002F
	<i>Dollars per farm</i>				
Net cash farm business income ³	14,357	13,194	11,175	10,888	8,006
Less depreciation ⁴	7,409	7,027	7,357	--	--
Less wages paid to operator ⁵	637	499	608	--	--
Less farmland rental income ⁶	543	802	757	--	--
Less adjusted farm business income due to other household(s) ⁷	1,332	1,262	801	--	--
	<i>Dollars per farm operator household</i>				
Equals adjusted farm business income	4,436	3,603	*1,652	--	--
Plus wages paid to operator	637	499	608	--	--
Plus net income from farmland rental ⁸	868	1,312	n.a.	--	--
Equals farm self-employment income	5,941	5,415	*2,260	--	--
Plus other farm-related earnings ⁹	1,165	944	339	--	--
Equals earnings of the operator household from farming activities	7,106	6,359	2,598	2,447	-198
Plus earnings of the operator household from off-farm sources ¹⁰	52,628	57,988	59,349	59,943	59,343
Equals average farm operator household income comparable to U.S. average household income, as measured by the CPS	59,734	64,347	61,947	62,390	59,145
	<i>Dollars per U.S. household</i>				
U.S. average household income ¹¹	51,855	54,842	57,045	--	--
	<i>Percent</i>				
Average farm operator household income as percent of U.S. average household income	115.2	117.3	108.6	--	--
Average operator household earnings from farming activities as percent of average operator household income	11.9	9.9	4.2	--	--

P=preliminary. F = forecast. -- = Not available. * = The relative standard error exceeds 25 percent, but is no more than 50 percent.

1. This table derives farm operator household income estimates from the Agricultural Resource Management Study (ARMS) that are consistent with Current Population Survey (CPS) methodology. The CPS, conducted by the Census Bureau, is the source of official U.S. household income statistics. The CPS defines income to include any income received as cash. The CPS definition departs from a strictly cash concept by including depreciation as an expense that farm operators and other self-employed people subtract from gross receipts when reporting net cash income. 2. Prior to 2000, net cash income from operating another farm and net cash income from farm land rental were included in earnings from farming activities. However, because of a change in the ARMS survey design, net cash income from a farm other than the one being surveyed and net cash income from farm land rental are not separable from total off-farm income. Although there is no effect upon estimates of farm operator household income in 2000, estimates of farm self-employment, other farm related earnings, earnings of the household from farming activities, and earnings of the farm from off-farm sources are not strictly comparable to those from previous years.

3. A component of farmsector income. Excludes incomes of contractors and landlords as well as the income of farms organized as nonfamily corporations or cooperatives and farms run by a hired manager. Includes the income of farms organized as proprietorships, partnerships, and family corporations.

4. Consistent with the CPS definition of self-employment income, reported depreciation expenses are subtracted from net cash income. The ARMS collects farm business depreciation used for tax purposes. 5. Wages paid to the operator are subtracted here because they are not shared among other households that have claims on farm business income. These wages are added to the operator household's adjusted farm business income to obtain farm self-employment income.

6. Gross rental income is subtracted here because net rental income from the farm operation is added below to income received by the household. 7. More than one household may have a claim on the income of a farm business. On average, 1.1 households share the income of a farm business. 8. Includes net rental income from the business. Also includes net rental income from farmland held by household members that is not part of the farm business. Beginning in 2000, net income from farmland rental is considered as part of off-farm income. (See footnote 2.) 9. Wages paid to other operator household members by the farm business and net income from a farm business other than the one being surveyed. In 2000, however, net income from a farm business other than the one being surveyed is included in off-farm earnings. (See footnote 2.) Beginning in 1996, also includes the value of commodities provided to household members for farm work.

10. Wages, salaries, net income from nonfarm businesses, interest, dividends, transfer payments, etc. Beginning in 2000, also includes net cash income from another farm and net cash income from farm rental. (See footnote 2.) 11. From the CPS.

Sources: U.S. Dept. of Agriculture, Economic Research Service, 1998, 1999, and 2000 Agricultural Resource Management Study (ARMS) for farm operator household data. U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey (CPS), for U.S. average household income.

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Table 32—Balance Sheet of the U.S. Farming Sector

	1998	1999	2000	2001F	2002F
<i>\$ billion</i>					
Farm assets	1,085.3	1,140.8	1,188.3	1,216.6	1,228.1
Real estate	840.4	886.4	929.5	957.3	968.8
Livestock and poultry ¹	63.4	73.2	76.8	76.3	77.7
Machinery and motor vehicles	91.7	92.3	92.0	92.0	93.0
Crops stored ^{2,3}	29.9	28.3	27.9	29.2	28.0
Purchased inputs	5.0	4.0	4.9	4.6	4.6
Financial assets	54.8	56.6	57.1	57.1	56.0
Total farm debt	172.9	176.4	184.0	192.8	196.5
Real estate debt ³	89.6	94.2	97.5	103.1	104.6
Non-real estate debt ⁴	83.2	82.2	86.5	89.8	91.9
Total farm equity	912.4	964.4	1,004.3	1,023.8	1,031.6
<i>Percent</i>					
Selected ratios					
Debt to equity	18.9	18.3	18.3	18.8	19.1
Debt to assets	15.9	15.5	15.5	15.8	16.0

F = forecast. P = preliminary. Numbers may not add due to rounding. 1. As of December 31. 2. Non-CCC crops held on farms plus value above loan rates for crops held under CCC. 3. Includes CCC storage and drying facilities loans, but excludes debt on operator dwellings.

4. Excludes debt for nonfarm purposes.

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Note: The current farm income and balance sheet forecasts can always be found at <http://www.ers.usda.gov/Briefing/FarmIncome/>

Table 33—Cash Receipts from Farming

	Annual			2000	2001					
	1999	2000	2001P	Dec	Jul	Aug	Sep	Oct	Nov	Dec
<i>\$ million</i>										
Commodity cash receipts¹	188,132	193,586	201,402	16,859	17,357	16,196	17,900	22,358	19,954	17,396
Livestock and products	95,547	99,473	104,615	8,173	9,859	8,921	8,643	9,452	8,302	7,937
Meat animals	45,614	52,994	52,533	4,425	4,933	4,281	4,155	4,944	3,708	3,991
Dairy products	23,207	20,622	24,423	1,700	2,218	2,160	2,180	2,098	1,881	1,835
Poultry and eggs	22,898	21,789	23,656	1,805	1,955	2,196	1,943	2,165	2,119	1,872
Other	3,828	4,067	4,004	243	752	284	365	245	594	238
Crops	92,585	94,113	96,787	8,685	7,498	7,275	9,257	12,906	11,652	9,460
Food grains	6,965	6,639	6,672	505	1,188	685	689	568	475	492
Feed crops	19,622	19,960	22,416	1,977	1,758	1,735	1,972	2,927	2,699	2,323
Cotton (lint and seed)	4,698	4,555	6,134	1,059	140	116	171	999	1,847	1,262
Tobacco	2,273	2,315	1,874	178	192	362	354	99	280	228
Oil-bearing crops	13,608	13,857	14,049	987	658	459	1,393	3,907	1,492	1,014
Vegetables and melons	15,236	15,889	15,985	872	1,284	1,615	1,836	1,496	1,145	973
Fruits and tree nuts	12,287	12,692	11,785	1,222	1,253	1,310	1,183	1,231	1,499	1,391
Other	17,894	18,206	17,872	1,885	1,024	992	1,658	1,679	2,216	1,775
Government payments	21,513	22,896	--	1,399	--	--	--	--	--	--
Total	209,645	216,482	201,402	18,258	17,357	16,196	17,900	22,358	19,954	17,396

-- = Not available. Annual values for the most recent year and monthly values for current year are preliminary and were estimated as of the 20th of the month prior to publication. 1. Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gain realized on redemptions during the period.

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Table 34—Cash Receipts from Farm Marketings, by State

Region and State	Livestock and products				Crops ¹				Total ¹			
	2000	2001P	Nov 2001	Dec 2001	2000	2001P	Nov 2001	Dec 2001	2000	2001P	Nov 2001	Dec 2001
\$ million												
North Atlantic												
Maine	262	262	23	22	242	230	12	15	504	492	35	37
New Hampshire	60	60	5	5	94	92	6	7	154	152	11	12
Vermont	441	483	39	37	67	67	6	4	508	549	45	40
Massachusetts	91	91	7	8	301	284	34	17	392	375	42	25
Rhode Island	8	8	1	1	40	40	3	6	48	48	4	7
Connecticut	165	169	19	15	337	336	19	34	503	505	37	49
New York	1,934	2,232	189	169	1,189	1,176	116	94	3,123	3,409	306	262
New Jersey	193	193	42	8	619	599	45	33	812	792	88	41
Pennsylvania	2,781	3,141	228	241	1,252	1,274	130	115	4,033	4,415	358	356
North Central												
Ohio	1,751	1,868	156	142	2,654	2,794	255	187	4,405	4,662	411	329
Indiana	1,695	1,865	165	149	2,886	3,156	278	258	4,581	5,022	443	407
Illinois	1,710	1,728	123	142	5,312	5,529	353	381	7,022	7,258	477	523
Michigan	1,335	1,480	116	117	2,140	2,028	241	181	3,475	3,507	357	298
Wisconsin	3,804	4,374	336	335	1,416	1,338	190	126	5,221	5,712	525	461
Minnesota	3,875	4,049	314	306	3,647	3,606	533	419	7,522	7,655	847	725
Iowa	5,747	6,035	500	504	5,027	5,361	643	507	10,774	11,397	1,143	1,011
Missouri	2,677	2,627	214	210	1,890	2,093	277	197	4,567	4,719	490	407
North Dakota	639	620	42	45	2,050	2,213	289	249	2,689	2,833	331	294
South Dakota	2,035	2,004	162	173	1,755	1,770	228	106	3,790	3,774	390	279
Nebraska	5,923	5,764	363	408	3,029	3,296	458	369	8,952	9,061	822	777
Kansas	5,488	5,638	401	431	2,417	2,494	292	279	7,905	8,132	693	710
Southern												
Delaware	557	555	45	40	184	185	18	8	741	740	63	48
Maryland	848	962	82	74	625	628	67	39	1,473	1,591	149	113
Virginia	1,549	1,553	121	109	732	784	91	59	2,281	2,337	212	168
West Virginia	339	340	30	25	51	58	4	4	391	398	33	29
North Carolina	4,275	4,367	367	350	3,135	3,125	400	296	7,410	7,492	767	646
South Carolina	792	784	74	60	752	752	78	61	1,544	1,536	152	121
Georgia	3,105	3,457	272	261	1,945	1,968	296	228	5,050	5,424	568	489
Florida	1,378	1,447	124	124	5,573	5,371	495	967	6,951	6,818	618	1,091
Kentucky	2,335	2,325	423	123	1,271	1,292	248	203	3,605	3,617	671	326
Tennessee	990	966	96	103	1,030	1,149	235	141	2,020	2,115	331	244
Alabama	2,684	2,932	225	210	588	726	128	98	3,272	3,659	353	307
Mississippi	2,037	2,224	169	166	886	1,271	354	139	2,922	3,494	523	305
Arkansas	3,248	3,490	271	267	1,639	2,001	395	179	4,887	5,490	667	446
Louisiana	653	657	45	44	1,167	1,227	271	258	1,820	1,884	316	302
Oklahoma	3,441	3,353	249	258	779	819	70	71	4,220	4,172	319	330
Texas	9,162	9,465	646	701	4,181	4,546	558	612	13,344	14,012	1,203	1,314
Western												
Montana	1,102	1,064	78	72	704	619	78	72	1,806	1,683	156	145
Idaho	1,628	1,895	142	151	1,761	1,668	261	199	3,389	3,564	402	350
Wyoming	795	746	49	44	160	139	35	18	954	885	84	63
Colorado	3,332	3,261	238	194	1,229	1,288	162	168	4,561	4,549	400	362
New Mexico	1,613	1,775	133	144	473	518	97	50	2,086	2,292	230	194
Arizona	1,063	1,181	80	90	1,226	1,427	155	194	2,290	2,609	235	284
Utah	770	803	71	72	240	257	31	25	1,010	1,060	101	97
Nevada	237	238	15	17	149	164	21	18	386	402	36	35
Washington	1,710	1,836	162	151	3,339	3,429	344	302	5,050	5,266	506	453
Oregon	826	830	74	74	2,223	2,263	258	164	3,049	3,094	333	238
California	6,269	7,300	568	538	19,241	18,909	2,059	1,268	25,510	26,209	2,627	1,806
Alaska	32	32	3	3	20	20	2	1	52	52	4	4
Hawaii	87	87	7	7	444	404	35	33	530	491	42	39
U.S.	99,473	104,615	8,302	7,937	94,113	96,787	11,652	9,460	193,586	201,402	19,954	17,396

Annual values for the most recent year are preliminary and were estimated as of the 20th of the month prior to publication. Totals may not add because of rounding. 1. Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gains realized on redemptions during the period.

Information contact: Larry Traub (202) 694-5593 or ltraub@ers.usda.gov. To receive current monthly cash receipts via e-mail, contact Larry Traub.

Table 35—CCC Net Outlays by Commodity & Function

	Fiscal year									
	1994	1995	1996	1997	1998	1999	2000	2001	2002 ⁴	2003 ⁴
	\$ million									
Commodity/Program										
Feed grains:										
Corn	625	2,090	2,021	2,587	2,873	5,402	10,136	6,297	3,241	1,803
Grain sorghum	130	153	261	284	296	502	979	478	206	202
Barley	202	129	114	109	168	224	397	217	97	85
Oats	5	19	8	8	17	41	61	36	14	8
Corn and oat products	10	1	0	0	0	0	6	8	12	0
Total feed grains	972	2,392	2,404	2,988	3,354	6,169	11,579	7,036	3,570	2,098
Wheat and products	1,729	803	1,491	1,332	2,187	3,435	5,321	2,922	1,383	1,053
Rice	836	814	499	459	491	911	1,774	1,423	1,058	1,029
Upland cotton	1,539	99	685	561	1,132	1,882	3,809	1,868	3,657	1,729
Tobacco	693	-298	-496	-156	376	113	657	386	-95	-96
Dairy	158	4	-98	67	291	480	684	1,140	57	48
Soybeans	-183	77	-65	5	139	1,289	2,840	3,281	3,420	2,352
Peanuts	37	120	100	6	-11	21	35	136	-17	0
Sugar	-24	-3	-63	-34	-30	-51	465	31	-295	-44
Honey	0	-9	-14	-2	0	2	7	23	-3	0
Wool and mohair	211	108	55	0	0	10	-2	38	-1	0
Operating expense ¹	6	6	6	6	5	4	60	5	6	6
Interest expenditure	-17	-1	140	-111	76	210	736	428	228	228
Export programs ²	1,950	1,361	-422	125	212	165	216	-2,047	649	556
1988-2000 Disaster/tree/ livestock assistance	2,566	660	95	130	3	2,241	1,452	2,326	128	0
Conservation Reserve Program	0	0	2	1,671	1,693	1,462	1,511	1,658	1,821	1,856
Other conservation programs	0	0	7	105	197	292	263	288	286	263
Other	-137	-103	320	104	28	588	858	1,163	1,590	547
Total	10,336	6,030	4,646	7,256	10,143	19,223	32,265	22,105	17,442	11,625
Function										
Price support loans (net)	527	-119	-951	110	1,128	1,455	3,369	3,189	5,303	3,741
Cash direct payments: ³										
Production flexibility contract	0	0	5,141	6,320	5,672	5,476	5,057	4,105	3,962	3,980
Market loss assistance	0	0	0	0	0	3,011	11,046	5,455	113	0
Deficiency	4,391	4,008	567	-1,118	-7	-3	1	-1	0	0
Loan deficiency	495	29	0	0	478	3,360	6,419	5,293	5,201	2,918
Oilseed	0	0	0	0	0	0	460	921	0	0
Cotton user marketing	149	88	34	6	416	280	446	237	87	4
Other	22	9	61	1	0	1	461	820	18	1
Conservation Reserve Program	0	0	2	1,671	1,693	1,435	1,476	1,625	1,804	1,856
Other conservation programs	0	0	0	85	156	247	215	229	244	217
Noninsured Assistance (NAP)	0	0	2	52	23	54	38	64	156	199
Total direct payments	5,057	4,134	5,807	7,017	8,431	13,861	25,619	18,748	11,585	9,175
1988-2000 crop disaster	2,461	577	14	2	-2	1,913	1,251	1,848	94	0
Emergency livestock/tree/DRAP livestock indemn./forage assist.	105	83	81	128	5	328	201	478	34	0
Purchases (net)	293	-51	-249	-60	207	668	120	-1,310	-1,459	-2,569
Producer storage payments	12	23	0	0	0	0	0	0	0	0
Processing, storage, and transportation	112	72	51	33	38	62	81	122	139	118
Export donations ocean transportation	156	50	69	34	40	323	370	362	320	7
Operating expense ¹	6	6	6	6	5	4	60	5	6	6
Interest expenditure	-17	-1	140	-111	76	210	736	428	228	228
Export programs ²	1,950	1,361	-422	125	212	165	216	-2,047	649	556
Other	-326	-105	100	-28	3	234	242	282	543	363
Total	10,336	6,030	4,646	7,256	10,143	19,223	32,265	22,105	17,442	11,625

1. Does not include CCC Transfers to General Sales Manager. 2. Includes Export Guarantee Program, Direct Export Credit Program, CCC Transfers to the General Sales Manager, Market Access (Promotion) Program, starting in FY 1991 and starting in FY 1992 the Export Guarantee Program - Credit Reform, Export Enhancement Program, Dairy Export Incentive Program, and Technical Assistance to Emerging Markets, and starting in FY 2000 Foreign Market Development Cooperative Program and Quality Samples Program. 3. Includes cash payments only. Excludes generic certificates in FY 1986-96.

4. Estimated in FY 2003 President's Budget which was released on February 4, 2002 based on October 2001 supply & demand estimates. The CCC outlays shown for 1996-2002 include the impact of the Federal Agriculture Improvement and Reform Act of 1996, which was enacted on April 4, 1996, and FY 2000-FY 2003 outlays include the impact of the Agricultural Risk Protection Act of 2000, which was enacted on June 20, 2000. FY 2001 outlays include the impact of the \$5.5 billion of payments mandated by P.L. 107-25.

Minus (-) indicates a net receipt (excess of repayments or other receipts over gross outlays of funds).

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Food Expenditures

Table 36—Food Sales

	Annual			2001			2002			Year-to-date cumulative	
	1998	1999	2000	Dec	Jan	Feb	Dec	Jan	Feb		
<i>\$ billion</i>											
Sales ¹											
At home ²	390.1	407.6	442.4	42.4	36.7	33.3	452.4	36.7	70.0		
Away from home ³	310.4	332.7	359.9	32.2	28.8	29.2	367.3	28.8	58.0		
<i>1998 \$ billion</i>											
Sales ¹											
At home ²	390.1	400.0	424.4	39.1	33.6	30.5	420.3	33.6	64.1		
Away from home ³	310.4	324.3	341.7	29.5	26.3	26.6	342.1	26.3	52.9		
<i>Percent change from year earlier (\$ billion)</i>											
Sales ¹											
At home ²	3.9	4.5	8.5	-0.2	1.7	-2.3	2.6	1.7	-0.3		
Away from home ³	4.4	7.2	8.2	7.1	4.0	6.3	4.6	4.0	5.1		
<i>Percent change from year earlier (1998 \$ billion)</i>											
Sales ¹											
At home ²	1.6	2.5	6.1	-2.8	-0.9	-4.7	-0.5	-0.9	-2.7		
Away from home ³	1.7	4.5	5.4	4.0	1.1	3.1	1.7	-5.1	-1.1		

-- = Not available. 1. Food only (excludes alcoholic beverages). Not seasonally adjusted. 2. Excludes donations and home production.

3. Excludes donations, child nutrition subsidies, and meals furnished to employees, patients, and inmates.

Information contact: Annette Clauson (202) 694-5389

Note: This table differs from Personal Consumption Expenditures (PCE), table 2, for several reasons: (1) this series includes only food, excluding alcoholic beverages and pet food which are included in PCE; (2) this series is not seasonally adjusted, whereas PCE is seasonally adjusted at annual rates; (3) this series reports sales only, but PCE includes food produced and consumed on farms and food furnished to employees; (4) this series includes all sales of meals and snacks, while PCE includes only purchases using personal funds, excluding business travel and entertainment. For a more complete discussion of the differences, see "Developing an Integrated Information System for the Food Sector," ERS Ag. Econ. Rpt. No. 575, Aug. 1987, available at <http://www.ers.usda.gov/publications/aer575/>

Transportation

Table 37—Rail Rates; Grain & Fruit-Vegetable Shipments

	Annual			2001					2002	
	1999	2000	2001	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Rail freight rate index ¹ (Dec. 1984=100)										
All products	113.0	114.5	116.9	115.8	117.8	118.0	119.1	118.9	119.9	118.9
Farm products	121.7	123.1	124.3	124.4	125.4	125.4	125.0	124.3	124.9	124.9
Grain food products	99.7	100.4	102.8	102.2	103.4	103.1	103.4	103.0	103.2	103.1
Grain shipments										
Rail carloadings (1,000 cars) ²	24.2	21.8	21.6	23.0	20.7	26.1	23.1	20.6	22.3	22.5
Barge shipments (mil. ton) ³	3.5	3.1	2.9	1.9	2.4	2.6	3.9	3.7	1.2	2.0
Fresh fruit and vegetable shipments ⁴										
Piggy back (mil. cwt)	0.7	0.8	0.8	0.6	0.7	0.6	0.8	0.6	0.8	0.6
Rail (mil. cwt)	1.1	1.4	1.4	1.3	0.9	1.3	1.7	1.7	1.7	1.0
Truck (mil. cwt)	45.2	45.0	44.0	36.0	37.1	40.9	40.5	41.6	38.3	35.1

-- = Not available. 1. Department of Labor, Bureau of Labor Statistics. 2. Weekly average; from Association of American Railroads. 3. Shipments on Illinois and Mississippi waterways, U.S. Corps of Engineers. 4. Annual data are monthly average. Agricultural Marketing Service, USDA.

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Indicators of Farm Productivity

Table 38—Indexes of Farm Production, Input Use, & Productivity¹

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<i>1992 = 100</i>										
Farm output	88	83	89	94	94	100	94	107	101	106
All livestock products	92	93	94	95	98	100	100	108	110	109
Meat animals	95	97	97	96	99	100	100	102	103	100
Dairy products	94	96	95	98	98	100	99	114	115	115
Poultry and eggs	81	83	86	92	96	100	104	110	114	119
All crops	86	75	86	92	92	100	90	106	96	103
Feed crops	84	62	85	88	86	100	76	102	83	98
Food crops	84	76	83	107	82	100	96	97	90	93
Oil crops	88	72	88	87	94	100	85	115	99	107
Sugar	95	91	91	92	96	100	95	106	98	94
Cotton and cottonseed	92	96	75	96	109	100	100	122	110	117
Vegetables and melons	90	81	85	93	97	100	97	113	108	112
Fruit and nuts	95	102	98	97	96	100	107	111	102	102
Farm input ¹	101	100	100	101	102	100	101	102	101	100
Farm labor	101	103	104	102	106	100	96	96	92	100
Farm real estate	100	100	102	101	100	100	98	99	98	99
Durable equipment	120	113	108	105	103	100	97	94	92	89
Energy	102	102	101	100	101	100	100	103	109	104
Fertilizer	106	97	94	97	98	100	111	109	85	89
Pesticides	92	79	93	90	100	100	97	103	94	106
Feed, seed, and purchased livestock	97	96	91	99	99	100	101	102	109	95
Inventories	102	98	93	97	100	100	104	99	108	104
Farm output per unit of input	87	83	90	93	92	100	94	105	100	106
Output per unit of labor										
Farm ²	87	81	86	92	89	100	98	111	110	106
Nonfarm ³	95	95	96	96	97	100	100	101	--	--

-- = Not available. Values for latest year preliminary. 1. Includes miscellaneous items not shown separately. 2. Source: Economic Research Service.

3. Source: Bureau of Labor Statistics. *Information contact: John Jones (202) 694-5614*

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Food Supply & Use

Table 39—Per Capita Consumption of Major Food Commodities¹

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	Lbs.									
Red meats ^{2,3,4}	111.6	113.5	111.3	113.6	113.6	111.1	109.1	113.3	115.1	113.5
Beef	62.9	62.5	61.0	63.0	63.6	64.1	62.7	63.6	64.4	64.4
Veal	0.8	0.8	0.8	0.8	0.8	1.0	0.8	0.7	0.6	0.5
Lamb & mutton	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.9	0.8	0.8
Pork	46.8	49.2	48.5	49.0	48.4	45.2	44.8	48.2	49.4	47.7
Poultry ^{2,3,4}	58.2	60.5	62.0	62.7	62.1	63.1	63.1	63.7	66.8	66.5
Chicken	44.1	46.5	48.2	48.8	48.2	48.8	49.5	49.8	52.9	52.9
Turkey	14.0	14.0	13.9	13.9	13.9	14.3	13.6	13.9	13.8	13.6
Fish and shellfish ³	14.8	14.6	14.8	15.0	14.8	14.5	14.3	14.5	14.9	15.2
Eggs ⁴	30.0	30.1	30.1	30.3	29.9	29.9	30.2	30.8	32.1	32.2
Dairy products										
Cheese (excluding cottage) ^{2,5}	25.0	25.9	26.1	26.6	26.9	27.3	27.5	27.8	29.0	29.8
American	11.0	11.3	11.3	11.4	11.7	11.8	11.8	11.9	12.6	--
Italian	9.3	9.9	9.8	10.2	10.3	10.6	10.8	11.1	11.5	--
Other cheeses ⁶	4.6	4.7	5.0	5.0	5.0	4.9	4.9	4.7	4.9	--
Cottage cheese	3.3	3.1	2.9	2.8	2.7	2.6	2.6	2.7	2.6	2.6
Beverage milks ²	220.5	217.2	211.8	211.4	207.2	206.8	203.2	200.5	199.2	194.9
Fluid whole milk ⁷	87.1	83.5	79.5	78.0	74.4	73.5	71.4	70.2	70.7	69.8
Fluid lower fat milk ⁸	109.6	108.8	105.8	104.9	101.3	100.1	98.1	96.6	96.0	95.1
Fluid skim milk	23.8	24.9	26.5	28.5	31.5	33.2	33.7	33.7	32.5	30.0
Fluid cream products ⁹	7.7	8.0	8.0	8.0	8.3	8.6	8.9	9.0	9.5	9.9
Yogurt (excluding frozen)	4.2	4.2	4.2	4.6	5.0	4.8	5.1	5.0	4.9	5.4
Ice cream	16.2	16.2	16.0	16.0	15.5	15.6	16.1	16.3	16.7	16.5
Lowfat ice cream ¹⁰	7.4	7.0	6.9	7.5	7.4	7.5	7.8	8.1	7.5	7.5
Frozen yogurt	3.5	3.1	3.5	3.4	3.4	2.5	2.0	2.1	1.9	1.8
All dairy products, milk equivalent, milkfat basis ¹¹	564.1	563.0	569.8	580.1	576.6	566.6	567.5	572.8	584.9	593.0
Fats and oils--total fat content	64.6	66.5	69.2	67.3	65.4	64.2	63.7	64.3	67.0	74.5
Butter and margarine (product weight)	14.8	15.2	15.6	14.7	13.6	13.3	12.5	12.6	12.6	12.8
Shortening	22.3	22.3	25.0	23.9	22.2	21.9	20.5	20.5	21.1	23.1
Lard and edible tallow (direct use)	1.8	3.5	3.4	4.2	4.3	4.6	4.0	5.1	5.6	5.9
Salad and cooking oils	26.3	27.1	26.6	25.9	26.5	25.7	28.1	27.3	28.8	33.7
Fruits and vegetables ¹²	651.9	677.9	690.1	702.3	690.5	698.1	708.0	699.2	705.4	707.7
Fruit	254.2	282.0	280.8	287.7	282.0	279.0	289.6	284.1	289.8	279.4
Fresh fruits	112.5	122.9	123.6	125.0	122.6	126.1	129.5	128.9	129.5	126.8
Canned fruit	19.7	22.8	20.6	20.7	17.3	18.4	20.1	17.0	19.2	17.4
Dried fruit	12.2	10.7	12.5	12.7	12.7	11.1	10.6	12.1	10.2	10.5
Frozen fruit	3.8	3.9	3.7	3.7	4.2	3.9	3.6	4.1	3.7	3.7
Selected fruit juices	105.5	121.1	120.2	125.1	125.0	119.2	125.2	121.6	126.8	120.6
Vegetables	397.7	395.9	409.3	414.6	408.5	419.1	418.4	415.1	415.6	428.3
Fresh	170.8	174.2	180.8	186.8	180.9	186.0	190.2	186.4	191.9	201.7
Canning	114.0	111.7	112.0	111.2	109.4	107.8	106.0	107.1	103.3	104.7
Freezing	72.4	70.5	75.4	77.6	78.9	83.4	81.6	80.5	81.0	79.7
Dehydrated and chips	32.7	31.4	33.4	30.7	31.0	33.9	32.7	32.5	30.6	33.7
Pulses	7.8	8.1	7.7	8.3	8.3	7.9	7.9	8.7	8.8	8.6
Peanuts (shelled)	6.5	6.2	6.0	5.7	5.6	5.6	5.8	5.8	6.0	5.7
Tree nuts (shelled)	2.2	2.2	2.3	2.3	1.9	1.9	2.1	2.2	2.5	2.5
Flour and cereal products ¹³	182.3	184.7	189.3	192.0	190.3	196.3	197.3	196.1	196.9	199.9
Wheat flour	136.6	138.1	142.2	143.0	140.1	146.5	146.9	144.9	144.0	146.3
Rice (milled basis)	16.2	16.7	16.6	18.0	18.7	17.6	18.1	18.3	19.5	19.7
Caloric sweeteners ¹⁴	137.5	140.5	143.4	145.9	148.0	148.5	151.3	152.6	155.0	152.4
Coffee (green bean equiv.)	10.3	10.0	9.0	8.1	7.9	8.7	9.1	9.3	9.8	10.3
Cocoa (chocolate liquor equiv.)	4.6	4.5	4.3	3.8	3.6	4.2	4.0	4.3	4.5	4.7

-- = Not available. 1. In pounds, retail weight unless otherwise stated. Consumption normally represents total supply minus exports, nonfood use, and ending stocks. Calendar-year data, except fresh citrus fruits, peanuts, tree nuts, and rice, which are on crop-year basis. 2. Totals may not add due to rounding. 3. Boneless, trimmed weight. Chicken series revised to exclude amount of ready-to-cook chicken going to pet food as well as some water leakage that occurs when chicken is cut up before packaging. 4. Excludes shipments to the U.S. territories. 5. Whole and part-skim milk cheese. Natural equivalent of cheese and cheese products. 6. Includes Swiss, Brick, Muenster, cream, Neufchatel, Blue, Gorgonzola, Edam, and Gouda. 7. Plain and flavored. 8. Plain and flavored, and buttermilk. 9. Heavy cream, light cream, half and half, eggnog, sour cream, and dip. 10. Formerly known as ice milk. 11. Includes condensed and evaporated milk and dry milk products. 12. Farm weight. 13. Includes rye, corn, oats, and barley products. Excludes quantities used in alcoholic beverages, corn sweeteners, and fuel. 14. Dry weight equivalent.

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